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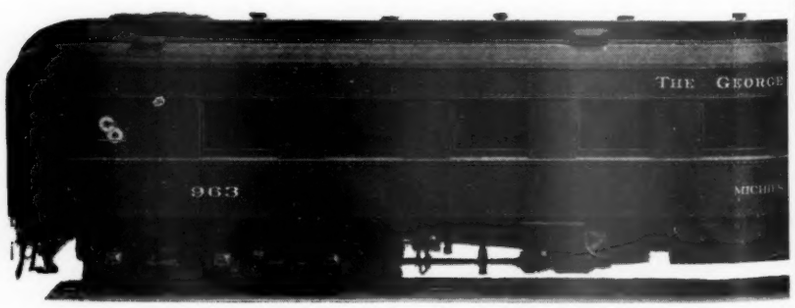

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RAILWAY AGE

Recovery or Revolution?

The necessity for government and the people to coordinate their efforts for economic recovery has not been questioned by anybody at any time. The governmental action needed has been principally action by the national government, although it has included action by the state and local governments. The principal action needed by the people has been action by business men.

Action by the national government under the present administration in behalf of recovery was begun by securing the passage of some seventeen "emergency" laws which were signed by the President between March 9 and June 16. The provisions of most of these laws and their subsequent administration make plain that they are intended to promote not only recovery from the depression, but an economic and social revolution. From their inception many persons who have devoted much of their lives to the study of economic and business history and problems have questioned whether the effort to accomplish a revolution would not interfere with the efforts to promote recovery.

Changes in the Trend of Business

Developments during the last fifteen months strongly indicate that there has been good reason for such questioning. Railway car loadings are the best single measure of the total volume and trend of production and commerce. The depression reached its first bottom in July and August, 1932, when car loadings were only 48 per cent of what they averaged in those two months in the five years 1925-1929. The statistics given in the accompanying table indicate the improvements and recessions in general business that have occurred since. Car loadings increased from less than 48 per cent of the 1925-1929 average in August, 1932, to almost 57 per cent of it in December. They again declined to 48 per cent of the 1925-1929 average in March, 1933, when the banking moratorium occurred, increased to 61.6 per cent of it in July, and declined to 58.1 per cent of it in August, to 57.6 per cent of it in September and to 56.8 per cent of it in the two weeks ended on October 7. The figures show that there was a marked improvement in business during the last one-third of 1932, and another marked improvement during April to July, 1933, inclusive, during which the recovery policies of the administration affected business only by anticipation, while since July there has been a steady recession as a result of which in the two weeks ended October 7, business was only slightly better relatively than in June and only relatively as good as in December, 1932.

Freight Car Loadings in 1925-1929, 1932 and 1933

	Per cent of 1925-1929 loadings, 1932	Per cent of 1925-1929 loadings, 1933
January	....	53.0
February	....	52.9
March	....	48.1
April	....	52.3
May	....	51.9
June	....	56.6
July	48.0	61.6
August	47.9	58.1
September	50.8	57.6
October	54.6	*56.8
November	53.2	....
December	56.8	....

* Two weeks ended October 7.

Government Policies and Business

Many persons regard any discussion which even savors of criticism of the administration's policies as unpatriotic and harmful. Such discussion is especially frowned upon by the authors and administrators of these policies. They affect everybody, however, and it is the duty of citizens of a free and democratic country to discuss them with all the fairness, but also with all the intelligence, that they can. They are being very fully discussed and ardently advocated by those who believe in them, and who are flooding the country with propaganda in their behalf which is being disseminated largely by the expenditure of government money. During the period April to July, inclusive, when business was improving, its improvement was attributed by spokesmen of the administration to its policies. It seems at least as logical to raise a question now as to whether they have not been more responsible for the decline in business that has occurred since they began to be put into effect than for the improvement that occurred before.

Giving Nature a Chance

The *Railway Age* is concerned with the administration's policies, first, because of their effects upon general business, and thereby upon the traffic and earnings of the railways, and, second, because some of them specifically and directly deal with the transportation problem. The pressing immediate need of the nation

has been and still is the adoption and execution of policies which will promote economic recovery, and for months it has seemed to us that the policies needed to promote recovery have been subordinated to policies designed to accomplish an economic and social revolution that were likely to retard and delay recovery. Economists of the new deal ridicule those who would rely more for recovery upon natural economic forces than upon artificial and revolutionary government measures, but physicians have learned to rely more for recovery upon the natural recuperative powers of their patients than upon bleeding, purging and doping, and, similarly, we still venture to believe that economic doctors can do more good by trying to help nature than by trying to substitute drastic and untried remedies for the curative powers of nature, especially in the case of a patient that already is convalescing.

The improvement in business that occurred during the last one-third of 1932 was obviously due to natural causes. Its decline during the first one-third of 1933 doubtless was due to banking and credit conditions and tendencies, the correction of which by the needed exercise of governmental power to restrict withdrawals from the banks was followed immediately by resumption of the improvement, which again was due to natural causes. What has caused the decline since July? The only new and important influences by which business has since been affected have been the administration's revolutionary policies; and developments under them have not altered our belief in the desirability of giving nature a large measure of opportunity in business in general, and on the railroads in particular.

Concerning Some Government Policies

One of the principal causes and effects of the depression has been the inadequacy of agricultural purchasing power. When legislation to reduce hours of work and increase wages in industry was first proposed this paper pointed out that its inevitable tendency would be to increase costs of production and prices in industry, and thereby to reduce agricultural purchasing power. Everybody knows now that it has had, and is still having, this effect. It was repeatedly pointed out that the largest decline in production and employment had occurred in the capital goods industries; that it was essential to the revival of those industries to encourage business men to make improvements in their plants and machinery; and that, to this end, it was necessary to create conditions under which they could reduce their losses or increase their profits and sell securities to raise new capital.

Until recently the means essential to reviving the capital goods industries were almost disregarded, and, in fact, the policy of reducing hours and increasing wages has tended in many industries to increase losses or reduce profits, and thereby to reduce their ability to buy capital goods. In addition, the government, in order to carry out several of its recovery policies, is making such demands upon the market for capital as severely to restrict the amount of it available for private industries. Some industries, such as the railroads, would be willing to get from the government part of the money they need to spend, but the government has persisted in imposing such hard terms for loans that most industries, including the railroads, regard it as contrary to their interest to accept money from it.

Business men, large and small, may not have shown the ability and initiative within recent years that might reasonably have been expected of them, but, nevertheless, they are the key men in the nation's economic system, and many of the government's recovery policies have had so much more of a tendency to give encouragement to labor leaders and economists with a socialistic complex than to business men that they have spread uncertainty and fear among those the inspiring of confidence and courage in whom is most essential to recovery. The talk of inflation had temporarily a stimulating effect upon business, but recently the threat of currency inflation and the delay in announcing a definite and sound currency policy have had a retarding effect. In spite of the recession that has occurred since July, underlying economic conditions are still better than at any time within the last four years, and if and when the government modifies some of its policies the improvement in business undoubtedly will be resumed.

Government Transportation Policies

It is gratifying to be able to say that, from its inception, there has been shown more sanity in drafting and administering the emergency transportation legislation than any of the other recovery acts. Its labor provisions have made it impossible to effect under it most of the economies in railway operation for which it was originally proposed. Thus far, however, Co-ordinator Eastman and his staff have shown no disposition to try to revolutionize railroad transportation under the guise of promoting recovery. They have two principal tasks. One is to co-operate with railway managements in effecting all the economies that may be reasonably practicable without reducing employment. The other is to study the entire transportation situation and recommend comprehensive new transportation legislation to Congress. In addition, Co-ordinator Eastman has sought to stimulate railroad buying by offering the railroads government loans and by other means. The transportation situation is in a condition of flux, and many new kinds of equipment and methods are being presented for consideration by the co-ordinator, his staff and railway officials, but thus far the co-ordinator and his staff have been disposed to hear all sides of every question before committing themselves.

Evolution versus Revolution

It is to be hoped that this will continue to be their policy. The *Railway Age* is among those who believe that revolutions usually do not cause, but arrest, progress; that progress usually is the result of evolution—not of sudden and violent changes, but of steady development and improvement in accordance with chang-

ing conditions and requirements. It does not seem good sense to condemn and attempt swiftly to revolutionize an economic system under which the American people have made the greatest economic progress and enjoyed the greatest prosperity ever known in the world merely because under it there have occurred periods of depression such as the present one. Furthermore, it would appear that if the system needs revolutionizing, the worst possible time that this could be undertaken would be in the midst of a depression when unsuccessful experiments would not merely reduce prosperity, but increase the difficulty of recovering it. Likewise, it does not seem that it would be good sense, when the railroads are in bad financial condition and have a large surplus capacity because they have lost almost 50 per cent of their traffic owing to the depression and to unprecedented government-aided outside competition, to condemn as greatly over-expanded, antiquated, inefficient and needing revolution a system of railroads which only ten years ago needed expansion and which was sufficiently progressive to supply the country for a hundred years with the best and cheapest transportation in the world.

Will Less Revolutionizing Aid Recovery?

What the nation most needs now is recovery, not revolution, and in a country in which production—the only source of wealth and incomes—has declined over 40 per cent, an increase of production as well as of employment is obviously essential to recovery. If the nation can recover without revolution, that may show that revolution is not much needed. If it can recover in spite of revolution, that will not show that revolution is needed. The need for revolution can be shown only by demonstrating that prosperity can be restored and a better distribution of wealth and income secured only by revolution. Once this has been shown, it will still be necessary to demonstrate, in order to justify any revolutionary policies advocated or adopted, that they are the particular revolutionary policies required to accomplish the desired purpose.

The revolutionary policies thus far adopted have not been vindicated, in the opinion of many persons whose views are entitled to much more weight than they have been given, either by reason or experience. On the contrary, reason and experience seem strongly to support the view that it is essential to early renewal of the improvement in business that revolution shall speedily be subordinated to recovery as the objective of statesmen and labor leaders, as well as of business men.

Capacitors for Signal Power Lines

The application of capacitors to signal power lines presents an opportunity to the railroads to reduce operating expenses and improve service without a reduction in railroad forces. In brief, a capacitor is a device for improving the power factor in an alternating-current circuit. Where a low power factor leads to a penalty in power bills, the benefits of capacitors are evident. Furthermore, by maintaining a high power factor, more uniform line voltage can be secured throughout an extended line with power taken at numerous points, such as for an automatic block system. As a result, longer territories can be fed from certain stations where the power rate is lower, while intermediate feeding stations, with their attendant minimum charges, can be eliminated. Also, the increased capacity of the line will permit taking on station and platform lighting loads, thereby further reducing power bills.

As an example, the Norfolk & Western installed 10 capacitors at a cost of $10,347 which effected an annual saving of $17,000. Likewise, the Milwaukee, by installing five capacitors on a 104-mile territory, increased the power factor from 62 per cent to 87 per cent, while intermediate feed stations were eliminated and the station lighting load was added to the signal line. The cost of this installation was $4,800, while the net annual saving in power bills will be not less than $5,000 annually. The same opportunity to effect economy exists to a greater or less degree on approximately 10,000 miles of road in the United States equipped with straight alternating-current signaling, while capacitors can be used to advantage on about 10,000 additional miles where a-c. floating or a-c. primary systems of power supply are used.

What Are the Motorists Going to Do About It?

There is ample evidence that the commercial motor vehicle is rapidly monopolizing the highway system of Virginia as a free place of business, in the following figures showing the registration in this State, by years, of contract and for-hire trucks:

Year	Number registered
1929	2,624
1930	2,925
1931	2,962
1932	7,665
First 5 months 1933	9,108

Compared with 1929, there was an increase of 247.1 per cent in the registration of these vehicles in the first five months of 1933. In view of this enormous increase in the hazards facing the private automobilist, there is no wonder that during the same period the registration of private passenger cars dropped from 325,960 to 254,329, or a decrease of 21.98 per cent.

These commercial vehicles, augmented by the thousands of out-of-State trucks using our highways free of cost under our present reciprocity agreements, are rapidly destroying our highways and placing an unbearable road maintenance burden on every owner of a private automobile. Proof of this is to be found in the fact that the cost of maintenance jumped from $3,214,564 in 1929 to $6,552,137 in 1932, or 103.83 per cent. *In 1929, for every private car registered in Virginia there was spent $9.86 for road maintenance—in 1932 this cost jumped to $21.03.*

From a circular issued by the Railroad Employes and Taxpayers Association of Roanoke, Va.

Looking East Over the Elevated Tracks at Valley Stream, N. Y., Showing Far Rockaway Branch to the Right and the West Hempstead Branch to the Left in the Background

Long Island is Completing Another Large Grade Separation Project

Raises multiple-track line on embankment and viaduct for 2.7 miles to cross nine streets in Valley Stream, N. Y.

CONTINUING the solution of its grade crossing problem on Long Island, which has already involved several major grade separation projects during the last few years with an expenditure of more than $15,000,000, the Long Island railroad, part of the New York zone of the Pennsylvania, is now completing another large project, at Valley Stream, N. Y. In this latter project, which like most of the others has involved track elevation, rail and roadway grades have been separated at six existing thoroughfares, two additional street crossings and an important highway crossing have been opened under the tracks, and two existing street crossings have been closed. Extending over a track distance of 7,640 ft. on the main line of the Montauk division, and over approximately 6,500 ft. on two branches, the wall-retained embankment, viaduct and bridge structures employed required the placing of approximately 250,000 cu. yd. of fill, 55,000 cu yd. of concrete and 12,000 tons of structural steel.

Looking East from Rockaway Avenue Beneath More Than 1800 Ft. of Four and Five-Track Viaduct

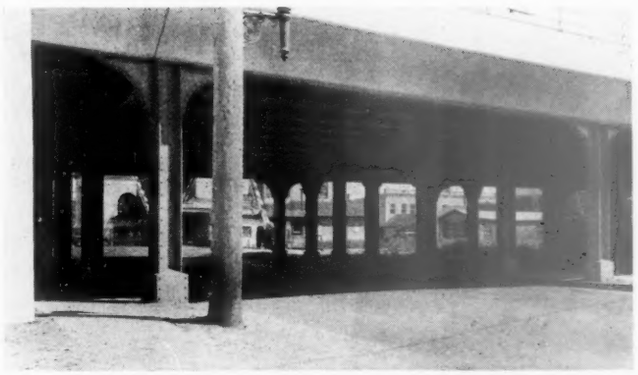
Many Important Tracks Affected

Valley Stream, which is approximately 18 miles from the Pennsylvania station terminal of the Long Island in New York City, is located on the south shore of Long Island, on the route of the railroad to the residential towns, summer resorts and ocean beaches along the south shore. Directly in the heart of the town, a two-track branch leaves the main line for Far Rockaway and other points on the south shore, while a second branch, partly two-track, extends approximately six miles to West Hempstead and other high-class residential communities near the center of the island. The main line includes two through tracks, called Montauk tracks because they extend to Montauk, at the most easterly end of the island, and two other through tracks, called Long Beach tracks, because, at the next town to the east, Lynbrook, they turn off to serve a number of residential and summer resort communities, including Long Beach. All of these tracks have electrified train operation from a 660-volt d. c. third-rail system.

The main tracks through Valley Stream extend in a general east and west direction, and, prior to their elevation, crossed the following thoroughfares in order from west to east: Franklin, Rockaway, Scranton, Horton and Wright avenues. With the elevation of the tracks, grades were separated at all of the streets except Scranton and Wright avenues, which were closed. In addition, new undercrossings were provided at Hicks street, about 600 ft. west of Franklin avenue, and at Satterie avenue, about 300 ft. west of the closed crossing of Scranton avenue, which it replaces.

On the Far Rockaway branch, which swings off to the south about 1900 ft. east of the west end of the

project, two bridge crossings were provided, the first over Sunrise highway, one of the two main traffic arteries along the south shore, and the second over Roosevelt avenue, one of the important streets of the town. The West Hempstead branch extends to the north from the main tracks, taking off about 1400 ft. east of the Far Rockaway junction. This line, which is double track for approximately 3,500 ft., crossed two important thoroughfares at grade within a distance of approximately 2,500 ft., Scranton avenue and Merrick road, both of which have been carried beneath the tracks. Furthermore, the future crossing of five intermediate city streets is provided for in the construction of the elevated structure on this branch.



The Six-Track Deck Girder Bridge Over Rockaway Avenue

2,700 Ft. of Four-Track Viaduct

To effect the separation of the crossings at Valley Stream, the main tracks were raised for a distance of 7,640 ft.; the West Hempstead branch tracks for 3,900 ft.; and the Far Rockaway branch tracks for 2,600 ft. Elevation was effected both by wall-retained embankments and by structural steel viaducts and bridges: the viaduct structures being employed mainly through the center section of the town to avoid the solid barrier effect of the embankment-wall construction.

From the west end of the grade change, four tracks rise on an embankment which extends for approximately 1,170 ft.; then follows 860 ft. of four-track viaduct; then 800 ft. of fill for five or more tracks; then 1,840 ft. of four and five-track viaduct; and then 2,970 ft. of four-track embankment, extending to the east end of the work. The 800-ft. section of fill between the two viaduct sections was particularly desirable because this section includes a new elevated local freight yard on the south side of the main tracks, immediately east of the Far Rockaway branch connection.

On the Far Rockaway branch, approximately 500 ft. of embankment extends to the bridge over Sunrise highway, beyond which a viaduct, approximately 450 ft. long, extends to a bridge over Roosevelt avenue. South of Roosevelt avenue the tracks are carried on embankments between retaining walls.

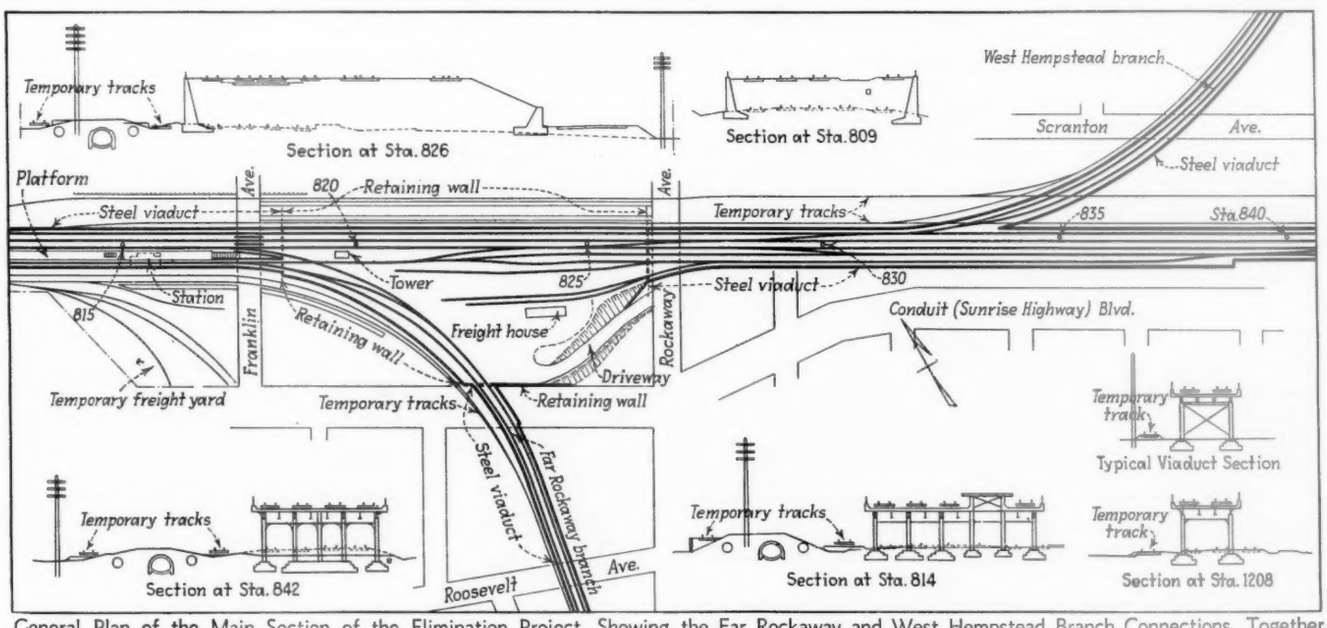
Taking off from the longer viaduct section of the main line, the West Hempstead branch is carried on a viaduct and bridges for approximately 2,500 ft., to the far side of the Merrick road crossing, from which point it is carried on embankment, with retaining walls, down to the old track level.

Since the old tracks on both the main line and the branches were practically level, the new tracks are also either level or practically so, 16 to 18 ft. above the old elevation, except for the run-offs at the ends, which in all cases are on grades of 1.5 per cent. These grades are negotiated readily by the multiple-unit commuter trains and electric freight locomotives which operate in this territory.

Rail Traffic Detoured Around Work

One of the most fortunate circumstances in connection with the Valley Stream project was the fact that adequate space was available either on or along the right-of-way to permit the construction of temporary tracks to carry traffic entirely outside the limits of the work, except for a relatively short distance at the west end. The importance of this is seen both in the magnitude of the track-raising project itself, and in the further fact that the tracks through Valley Stream carry an average of 340 trains daily, many normally at high speed and not making the Valley Stream station stop.

The construction of the temporary tracks was started on May 16, 1932, and, in spite of intensive work, it was August 10 before these tracks for the Montauk division main line and West Hempstead branch trains were put in service, and August 31 before the track to carry Far Rockaway service was completed. Two tracks were pro-



General Plan of the Main Section of the Elimination Project, Showing the Far Rockaway and West Hempstead Branch Connections, Together With Typical Cross Sections of the Construction Employed

The Two-Track Half-Through Girder Bridge Over Sunrise Highway Solved a Serious Traffic Problem

vided to carry the main line service, these taking off near the west end of the work and extending along the north side of the right-of-way on property owned by the City of New York and used in connection with its water supply from Long Island.

One serious difficulty was occasioned by the existence through the city's property, parallel with and close to the railroad, of a large brick water conduit and two 48-in. water mains, with only a foot or two of earth cover. With room for only one temporary track between the limits of the new north side retaining wall and the nearest water main, and, in fact, insufficient room at the west end, one of the temporary tracks had to be carried across the conduit and water mains. With the conduit and mains so close to the surface, it was necessary to construct a temporary low pile trestle over them to support this track. This same precaution had to be taken at the east end of the work where the outside temporary track again joined the main tracks, and also at the point where connection was made between the inside temporary main line track and the one temporary track serving the West Hempstead branch.

All of the temporary tracks were constructed to main line standards and were equipped for third-rail operation and for continuous cab signaling, as used in this territory. Furthermore, all switches in the temporary layout were provided with electro-pneumatic interlocking, controlled from five temporary towers.

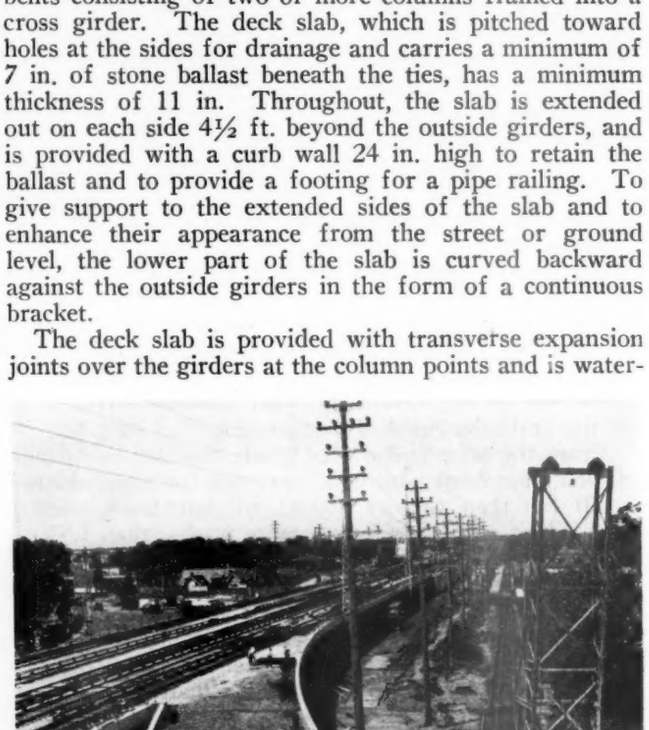
Details of Construction

With the right-of-way cleared of trains, a large force, totaling 200 men at times, carried forward the track elevation, removing the old tracks, constructing retaining walls and bridge abutments, hauling the filling material and erecting the steel viaduct and bridge structures. The retaining walls, which extend along both sides of the fill sections for almost their entire length and reach a maximum height of approximately 24 ft., are all of reinforced concrete design, with spread footings, while all of the bridge abutments are of the mass type. All of the concrete in these structures was mixed in accordance with the water-cement ratio and was chuted into place from towers mounted on the frames of one-yard tractor-mounted mixers. Plywood forms in removable sections were used throughout, which not only cut the expense of formwork but also produced a smooth surface which required a minimum of finish rubbing.

The grading, which kept pace with the wall construction, was all done with seven and eight-yard auto trucks, which brought available material from a large number of points within economical hauling limits. Practically all of the material used in the embankments was sand, which predominates on the island.

Simultaneously with the construction of the embankment sections, other forces constructed the pedestal column footings for the viaduct sections and proceeded with the erection of the steelwork. The viaduct, regardless of the number of tracks carried, consists of steel deck girders with a concrete deck slab, supported on bents consisting of two or more columns framed into a cross girder. The deck slab, which is pitched toward holes at the sides for drainage and carries a minimum of 7 in. of stone ballast beneath the ties, has a minimum thickness of 11 in. Throughout, the slab is extended out on each side 4½ ft. beyond the outside girders, and is provided with a curb wall 24 in. high to retain the ballast and to provide a footing for a pipe railing. To give support to the extended sides of the slab and to enhance their appearance from the street or ground level, the lower part of the slab is curved backward against the outside girders in the form of a continuous bracket.

The deck slab is provided with transverse expansion joints over the girders at the column points and is water-



The Incompleted West Hempstead Connection with the Main Line—Note One of Temporary Tracks at Right Still in Service

proofed with three plies of fabric, laid in asphalt. This is covered with 1½-in. asphalt plank to afford protection against the abrasive and cutting action of the ballast.

All but one of the street bridges are of the half-through girder type with a concrete encased deck, and all but one of these girder bridges have curb columns. The exception to the half-through type is at Rockaway avenue, where deck girder construction with a reinforced concrete deck slab, more or less similar to the viaduct construction, is employed. Thirty to 40-ft. roadways, with 8 or 10-ft. sidewalks on each side, are provided at all of the streets, except at Sunrise highway, which has a 60-ft. roadway and two 12½-ft. sidewalks, and at Merrick road, which has a 50-ft. roadway and two 10-ft. sidewalks. Seventy-seven-foot girders were required at the Sunrise highway bridge since the crossing of the highway is at an angle of approximately 53 deg.

New Station Facilities Being Provided

The first high-level track to be put in service was the westbound Far Rockaway track, over which the first train service was inaugurated on February 7 of this year. After some little finishing-up work on the eastbound side, the eastbound Far Rockaway track was put in serv-

ice on May 2. The first move, with two-way operation, separated all rail and vehicle travel at Roosevelt avenue and made it possible to connect up the dead ends of Sunrise highway under the new elevated structure.

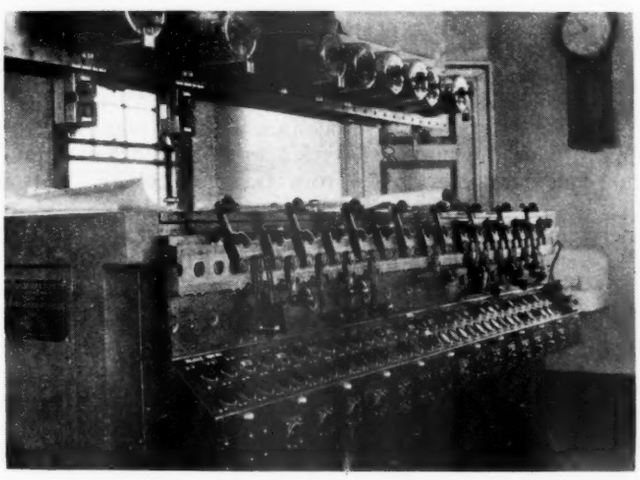
Both of the Far Rockaway tracks serve a new high-level 12-car passenger platform located on the main-line alinement, just west of where the Far Rockaway Branch tracks take off to the south. This platform, which is of reinforced concrete construction, 22 ft. wide and 700 ft. long, extending from Franklin avenue to Hicks street, with stairs to the street level at both ends and near the center, is a part of new passenger station facilities being provided at Valley Stream. These facilities will include a modern one-story station building, about 65 ft. by 31 ft., located directly south of the tracks and about midway the length of the platform. Part of the station will project beneath the viaduct to afford direct connection with the platform. The new station is designed to serve trains to and from the Far Rockaway, Long Beach and West Hempstead branches, no platform facilities being provided to serve the Montauk division main tracks, since trains on these latter tracks are not scheduled to stop at Valley Stream.

By pressing the work, the permanent Montauk main line and Long Beach tracks, fully electrified and cab signaled, were put in service on June 27. This left, to be completed principally the connecting section of viaduct between the main line and the West Hempstead branch, which had been left out because the space was cut by the two temporary main tracks, a relatively short section of retaining wall on the north side at the west end, and a small section of viaduct at Hicks street, which could not be built earlier because of encroachment of the inside temporary main track. The new passenger station is also yet to be completed.

New local freight facilities are located on an elevated triangular piece of property on the south side of the main tracks, just east of the Far Rockaway branch connection. These include essentially a one-story frame freight house with one stub house track and two team delivery tracks, served by bituminous macadam driveways. The new freight facilities will be reached by a driveway ramp 25 ft. wide, which extends to the freight-handling area from Rockaway avenue, just south of its new undergrade crossing of the railroad.

Interlocking Facilities

The switches in all of the newly elevated tracks are being interlocked in an electro-pneumatic system and, as put in service, are being connected up with the way-side signal and continuous cab signal systems employed generally on the Montauk division. All of the interlocked switches are controlled from a new 35-lever Union Switch & Signal Company interlocking machine located in a new two-story brick interlocking tower constructed along the main tracks just east of the Far Rockaway branch connection.



The New 35-Lever Interlocking Machine Controls All of the Important Switches Within the Limits of the Grade Changes

The work at Valley Stream, which, so far as affecting any train operation is concerned, was completed late in September, has all been planned and carried out under the general direction of A. C. Watson, chief engineer of the New York zone of the Pennsylvania, and under the direct supervision of George Patton, assistant engineer, New York zone, while J. M. Fair, division engineer, has had general supervision over all of the track work. All of the work, with the exception of the third-rail and the signal work, which were done by company forces, has been carried out under contract by Foley Brothers, Inc., New York, who sublet the erection of the steelwork to the National Bridge Works, Long Island City, N. Y., and the American Bridge Company, New York. All of the structural steel was furnished by the American Bridge Company and the Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Railroad Committees Asked To Study Empty Mileage Problem

WASHINGTON, D. C.

CO-ORDINATOR Eastman has sent to the carriers' Regional Co-ordinating Committees a communication asking that they study methods of reducing empty car-mileage. Comparing 1932 with 1920, it shows that, in relation to net revenue ton-miles, gross ton-miles (based on tonnage of cars, both loaded and empty, and lading) increased 26 per cent and empty car-miles, 62.8 per cent. He pointed out that while freight traffic is normally unbalanced, that is to say, there is more traffic moving in one direction than in the other, which necessitates considerable empty-car movement opposite to the prevailing direction of the traffic, studies made by the Co-ordinator's Section of Car Pooling indicate that there is a large empty-car movement in the same direction as the loaded haul. They also show that in both directions there is relatively a much larger empty movement of foreign than of system cars. These facts, in the opinion of the Co-ordinator, are significant.

In his communication the Co-ordinator states that after his studies have progressed further, he hopes to be able to recommend to the committees a plan or plans for the reduction of this empty-car mileage. Car pooling is one possible remedy which will be considered. In the meantime, however, he has thought it well to present to the committees the problem which is indicated by the statistics which his staff has assembled. His thought is that the carriers' organizations may be able to develop a remedy more practicable or otherwise better than any which his staff may find it possible to develop. He asks the committees to advise him, from time to time, if it appears that progress is being made in the study of this problem. The text of the communication follows:

Empty freight car mileage has been a disturbing subject for more than thirty years. Following the adoption of the Per Diem Rules agreement in 1902, this item of performance began to assume equal importance with the "average miles per car per day."

The minutes of railroad associations are replete with reports,

statistics and discussion of empty mileage, while reports of Congressional committees and the records of formal hearings before the Interstate Commerce Commission contain evidence that the so-called "excess" empty mileage of freight cars is a factor which must be given consideration in studies of railroad operation and in the regulation of rates.

The Section of Car Pooling of my organization is now making a study of this subject, but this study has not reached the stage where definite recommendations can be submitted for changes in car-handling methods. Sufficient data have been collected, however, to indicate that the decline in railroad traffic and the consequent need for operating economies have not affected the practices which contribute to the cross-haul movement of empty cars of the same class and of equal availability for loading.

For Class I roads, the 1932 data compared with the 1920, show increases in relation to net revenue ton-miles of 26 per cent in the gross ton-miles, and of 62.8 per cent in the empty car-miles. Translated, this increase meant the production of about one hundred and thirty-six billion gross ton-miles for which the carriers received no direct compensation. Nearly one-half of these ton-miles can be allocated to the increase of two billion six hundred million empty car-miles.

As illustrative of the present extent of this cross haul, I am inclosing two summaries covering the movement of box cars during the period August 1 to 7, 1933, inclusive. One statement shows the movement of loaded and empty box-car units, system and foreign separately, into and out of 22 terminals. The terminals selected for this study are typical, both territorially and with respect to variety of box-car traffic. The number of loaded box cars included in this study is equal to 36 per cent of the total of all freight cars loaded during the first week of August.

The other statement covers the mileage made by box cars, loaded and empty, system and foreign, separately, over the main line divisions of the principal railroad systems in the United States. The roads selected own about 70 per cent of the total freight cars in the country, and the main line mileage for which reports were made fairly covers the main traffic routes. The mileage made by box cars covered by this study equals 21.4 per cent of the mileage made by all classes of cars over all lines of the reporting railroads. Comparison with other statistical data indicates that the figures reported are representative.

Possibly the most striking figure in both statements is the percentage of loaded box-car movements made by "foreign" cars. Of the total loaded units moved in and out of the terminals 55 per cent were "foreign." In the mileage statement the ratio of foreign loaded haul is 49.4 per cent.

These ratios assume added significance when we consider that system cars include local merchandise cars, which constitute more than one-third of all box-car loading. It follows, therefore, that probably two-thirds of the carload traffic handled in box cars is moved in cars belonging to other than the handling railroad.

Under present methods of car handling, such cars, when placed for loading or when released from their loading, are treated quite differently from system cars. The effect of this different treatment is reflected in the empty-car movement.

That there must be an empty movement opposite the prevailing direction of an unbalanced traffic is axiomatic. While even such empty movement may be excessive, it is the movement of empty cars in the same direction as the prevailing loaded haul to which I now direct your attention.

In these studies we find that in the terminal handling of nearly 50,000 cars per day, while there were 26.3 empty system cars moved for each 100 loaded movements, there were 36 foreign empties moved for each 100 loaded cars, an excess in the ratio of 37 per cent.

In the mileage statement covering an average of nearly 8,000,000 box-car miles per day, the system ratio was 15.8 empty miles to each 100 loaded, whereas the foreign ratio was 24.1, or an excess of 52.5 per cent.

A logical deduction from these studies is that the excess of foreign over system empty mileage is due in the main to the fact that empty movements are being made with foreign cars that would not be made if the cars bore the initials of the handling road. Such allowance as should be made for difference in capacity, condition or other physical factors, will apply to both foreign and system cars. In fact, the advantage, if any, will be in favor of the foreign car, which is less likely to be unfit for service.

The conditions mentioned affect all classes of railroad-owned cars, but box cars were selected for this study because they are more nearly of the "general service" type.

After my studies have progressed further, I hope to be able to recommend to you a plan or plans for the reduction of this empty-car mileage. Car pooling is one possible remedy which will be considered. In the meantime, however, I have thought it well to present to you the problem which is indicated by the attached statistics. It may be that committees or organizations which are available for your assistance may be able to develop a remedy or remedies more practicable or otherwise better than any which my staff will find it possible to develop. I shall be glad if you will advise me, from time to time, if it appears that progress is being made in the study of this problem.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended October 7 amounted to 654,428 cars, a decrease of 7,399 cars as compared with the previous week and an increase of 29,339 cars as compared with the corresponding week of last year. As compared with 1931 it was a reduction of 109,390 cars. Miscellaneous freight, grain and grain products, ore and livestock showed increases as compared with the preceding week, and merchandise, grain, coal and livestock showed reductions as compared with last year. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, October 7, 1933

Districts	1933	1932	1931
Eastern	138,150	136,332	167,952
Allegheny	122,214	110,196	145,096
Pocahontas	42,881	44,823	50,667
Southern	90,714	93,274	105,698
Northwestern	100,921	81,104	103,022
Central Western	103,339	103,835	124,653
Southwestern	56,209	55,525	66,730
Total Western Districts	260,469	240,464	294,405
Total All Roads	654,428	625,089	763,818
Commodities			
Grain and Grain Products	31,804	36,023	36,690
Livestock	22,455	22,565	28,116
Coal	111,985	132,951	139,755
Coke	7,010	4,979	5,147
Forest Products	24,956	18,411	24,633
Ore	33,761	6,645	23,277
Merchandise L.C.L.	174,311	179,297	217,551
Miscellaneous	248,146	224,218	288,649
October 7	654,428	625,089	763,818
September 30	661,827	621,658	777,712
September 23	652,669	595,604	738,036
September 16	652,016	587,246	742,614
September 9	571,387	501,537	667,750
Cumulative total, 40 weeks	22,078,150	21,597,781	29,485,525

Car Loading in Canada

Car loadings in Canada for the week ended October 7 totaled 53,198, according to the compilation of the Dominion Bureau of Statistics. This was an increase over the previous week's total of 1,969 cars and the index number rose from 66.60 to 69.17. Also, despite a decrease in grain loading of 3,941 cars and in merchandise of 822 cars, the total was greater than for the corresponding week last year by 418 cars.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
October 7, 1933	53,198	19,745
September 30, 1933	51,229	19,958
September 23, 1933	47,387	19,964
October 8, 1932	52,780	19,092
Cumulative Totals for Canada:		
October 7, 1933	1,504,805	735,569
October 8, 1932	1,679,654	761,852
October 3, 1931	1,944,808	1,022,241

The Future of the Railways*

Period of expansion ended—Thinking and policies must be reoriented to meet competition and rapidly changing conditions

By Samuel O. Dunn

Editor, Railway Age, and Chairman, Simmons-Boardman Publishing Company

WE are passing through a period which is very difficult for all of us, and especially for those who are old enough to have become somewhat inflexible in our thinking and work. We are in the midst of great changes in government and business which we must successfully oppose or adjust ourselves to if we are not to become failures. When I was a very young newspaper reporter I asked an eminent man what was the principal requisite to practical success. He replied in one word—"adaptability". Every day for thirty-five years the experience and discipline of a studious and hard-working life have been teaching me the significance and truth of his answer. He did not mean the adaptability of the man or institution that is remolded by every change in conditions. He meant the adaptability of the man or institution that constantly tries to influence and improve conditions, but always continues to adapt himself or itself to conditions that cannot be controlled, and to progress regardless of what changes in conditions occur.

We Must Reorient Our Thinking

No men and industry in this country so imperatively need this kind of adaptability at this time as railway officers and the railroad industry. The railroad industry is confronted with great changes in economic and transportation conditions, and railroad men and the railroad industry must change those conditions inimical to the railroads that they can change, and adjust the railroads to those conditions that they cannot change, or railroad officials and the railroad industry as a private enterprise will go under. All of us who can exert any influence on the future development and traffic of the railways must reorient our thinking, and many railway policies must be reoriented, if the railroads are to play in future the important role in American industry and commerce that they have played in the past. This reorientation of thinking and policies will be very difficult for older railway officers, less difficult for those that are younger, but difficult for all. I know this, because I am having the difficulty in readjusting myself to new conditions that I know other men must be having; but the readjustment must be made.

The changed conditions with which the railroads are confronted are due to numerous causes, some of them of worldwide scope, some of them more or less peculiar to this country. For example, in most countries the railways are subject to unprecedented competition by highway, but in no other country are they suffering so much from the competition of private automobiles as here, because, owing to our greater national income per capita, we have many more automobiles in proportion to our population than any other country.

Nothing is more essential to the nation's economic recovery than a large increase in the employing and purchasing power of the railways, and, therefore, the problem of increasing their employing and purchasing power is one of the most important problems that must be solved by those who are endeavoring to revive the country's business.

The number of railway employees declined from an average of 1,740,567 in the five years 1925-1929 to 1,048,568 in 1932, and the average annual railway payroll declined from $2,929,345,799 to $1,535,927,792 in 1932.

Railways Are Large Buyers

Even more important in its effects on general business has been the reduction in the purchases made by the railways from other industries. Their average annual expenditures for locomotives, cars, materials and fuel in 1925-1929 were $2,175,000,000, while in 1932 they were only $612,000,000, a reduction of $1,563,000,000, or 72 per cent. What this reduction in railway buying has meant to various industries and their employees is indicated by the following figures showing average annual purchases of equipment, fuel and materials in 1925-1929 and the purchases made in 1932. Purchases of locomotives and cars declined from an annual average of $308,000,000 to $36,400,000; of fuel from $421,000,000 to $175,000,000; of lumber and other forest products from $170,000,000 to $50,000,000; of iron and steel from $440,000,000 to $100,000,000; of copper and brass from $54,000,000 to $11,200,000; of electrical supplies from $25,300,000 to $5,200,000. Expenditures upon improvements of roadway and other permanent structures declined from $478,000,000 to $131,000,000. During the first one-half of 1933 railway employment and purchases were even less than in the first one-half of 1932, but, as a result of the improvement in general business and railway earnings, they have since been increasing.

Those responsible for the recovery policies of the administration have come to a realization that a revival of the industries so largely dependent for their business upon railroad buying is one of the essentials of recovery, and are offering to make government loans to the railways to enable them to increase their expenditures. The fact must be recognized that most railways are not seeking loans for this purpose, and that if they are to accept them to help general business they must be made upon terms as to security, repayment and rates of interest which the railways can reasonably afford to accept. Heretofore the government has exacted so much collateral and such high rates of interest as to penalize the railways for their efforts to support its recovery program. The railways have been too long and too often used by the government as a Santa Claus to aid other industries.

The early expenditure by the railways of money advanced to them by the government on easy terms and

* An address before the New England Railroad Club, October 10, 1933.

which they need to spend, undoubtedly would be helpful to general business and to the railways themselves. But the problem of making the railways a really effective and lasting instrumentality in promoting the revival of general business is a much larger and more important one than that of getting them to borrow and spend a few hundred million dollars of government money in the near future. The real problem is the problem of restoring their earning capacity and credit in order that they may be able for a long period of years to very greatly increase their expenditures out of their own earnings and with capital raised by the sale of their securities to private investors.

The restoration of the earning capacity and credit of the railways is dependent upon an improvement in general business which will increase their traffic, upon changes in the policies of the national and state governments in dealing with the railways and other means of transportation, which will further increase their traffic, and upon the investment by them of new capital to reduce their costs of operation and to provide facilities and service which will better enable them to meet new kinds of competition with which they are confronted.

Subsidized Competition

The earning, employing and purchasing capacity of the railways has been reduced, not only by the depression, but also, and in very large measure, by losses of traffic to carriers by highway, waterway and air that have been able to take the traffic because they are not regulated as the railways are, because they are subsidized by the federal and state governments, and because they pay their employees much lower wages for working much longer hours than the railways do.

These gross inequalities can easily be corrected if the public wants them corrected, and their correction is essential if the public is to have a coordinated system of transportation which can render it the best practicable service at the least practicable cost. The states should withdraw subsidies from carriers by highway, and at the same time reduce the tax burden of their own people, by requiring these carriers to pay rentals for the use of public highways proportionate to the highway costs that they cause. They should be subjected by both the federal and state governments to the same kinds of regulation of their service and rates as the railways. The long and short haul clause of the Interstate Commerce Act should be so amended and administered as to enable the railways to compete for traffic with other carriers, especially the coast-wise steamship lines.

Operators of boats using inland waterways should be subjected to regulation of their rates and required to pay tolls to reimburse the taxpayers for their expenditures upon the waterways, and no further expenditures should be made upon any inland waterway upon which operators of boats cannot pay reasonable tolls. The aviation industry has developed to a point where the government mail and other subsidies granted to it, and which enable it to take passengers as well as mail from the railways, should be withdrawn. Last June the government by its intervention stopped a movement of the railways to reduce the wages of their employees. If, in the opinion of the government, the present working conditions and wages of railway employees are reasonable, then the government, in its administration of the national recovery legislation, cannot fairly refrain from compelling carriers by water, highway and air to give their employees working conditions and wages comparable to those of railway employees.

A comprehensive study of the entire transportation situation of the country is now being made by Joseph B. Eastman, Federal Co-ordinator of Transportation, and his staff. There can be no question whatever that this study will demonstrate that the earning capacity, rate structure, service, conditions of employment and wages, purchasing power and credit of the railroad industry are being undermined by federal and state policies of subsidization and regulation which make possible and foster the most unfair competition with the railways to which any American industry ever was subjected. These policies are not only destructive of the interest and rights of railroad security owners and railroad employees, but of the interests of the public as well, because of their tendency enormously to increase the total cost of transportation service and, at the same time, to cripple and destroy railroad service which is indispensable to the public welfare.

There is no reason whatever to fear that the application of similar and fair policies to all agencies of transportation will be destructive of other means of transportation. Carriers by water, highway and air will continue under such policies to be able to render the kinds of service for which they are best fitted. It would, however, be destructive of the public interest to continue to make it impossible, by a continuance of present unfairly discriminatory, confiscatory and unrighteous government transportation policies, for the railways likewise to render economically the kinds of service for which they are best fitted.

Probably the most important new conditions with which the railways are confronted are, first, that their traffic has ceased to increase as rapidly as it did for three-quarters of a century, their passenger business having actually declined, and their freight business having increased only 9 per cent, during the nine years ending with 1929; and, second, that, whatever measures may be adopted by the state and national governments to equalize the terms of competition between the railways and other carriers, much of this competition will continue, and it will take increasing amounts of traffic from the railways unless they so adjust their operating costs, their service, their rates and their selling methods as to protect themselves.

Period of Expansion Ended

The great significance and importance of the fact that railway freight business increased about 85 per cent in the ten years ending with 1900, about 80 per cent in the ten years ending with 1910, over 60 per cent in the ten years ending with 1920 and only 9 per cent in the nine years ending with 1929, is only beginning to dawn upon many of us. Throughout the life of our railroad industry until 1920 its great problem was that of expanding its facilities sufficiently to enable it to handle a rapidly growing traffic. Even as recently as 1923, the railways, after having passed through a long period of shortages of facilities, entered upon a program of large capital expenditures principally for the purpose of eliminating car shortages. Throughout all the years of railroad development up to 1923 it was principally the rapid growth of traffic which made it possible for the railways quickly to recover their earning capacity after periods of depression and constantly to reduce their unit costs and their rates.

Now, if experience since 1920 is any criterion, we are confronted with the probability that no expansion of facilities will be required during the next decade, because at the peak of the traffic in 1929 the railroads had enough surplus capacity to have handled a further increase in traffic equal to that which had occurred during the preceding decade. Furthermore if it is sound to assume that the increase in traffic will be relatively no greater in future than it has been since 1920, we are also confronted with

the prospect that increases in the volume of traffic will not contribute toward making practicable economies in operation and reductions of rates as they did in all the years of railroad history prior to 1920, and that needed economies in operation will have to be effected by improvement in equipment, tracks, signaling, tools and operating methods that will save labor, materials and fuel.

The fact, however, that there will probably be no need for enlarging the capacity of the railways for some years to come complicates rather than simplifies the problems of railroad management and operation, and does not indicate that the railways will be able to reduce their expenditures for maintenance and improvements. The new competition with which they are confronted will require great changes in railway physical facilities and service.

Problems of Reconstruction

The last four years, and especially the last three, have been a period during which in the railroad and almost every other line of business the thinking and energy of executives have been devoted mainly, and in many cases almost exclusively, to means of effecting retrenchments. With gross earnings at last increasing, both currently and prospectively, in many lines of business, including the railroad business, the time has come to think more about the problems of reconstruction.

With respect to needed changes in facilities and service, the railroads are confronted with an apparent dilemma. They have lost so much traffic to other carriers partly because some other carriers have made lower rates, and partly because some other carriers have rendered more speedy, frequent and convenient service. The ability of other carriers to make lower rates has been largely due to artificial causes—to subsidies received by them from the state and national governments, and to longer working hours and lower wages of their employees. In other words, the relatively lower nominal or real costs of other carriers are secured by exploitation of the taxpayers and of labor.

The removal of the handicaps due to the artificially low costs of their competitors and to unequal regulation would still leave the railways confronted with the necessity of keeping down and reducing their costs and at the same time making radical changes and improvements in their service. They must continue to be the cheapest carriers of passengers and freight, because the national welfare requires cheap transportation, and because transportation by rail must be kept cheaper than by any other means to meet competition. At the same time the speed, frequency and convenience of railway service must be increased, because otherwise transport by highway and air will retain certain advantages which will make them attractive to the public at higher rates than those charged by the railroads.

Meeting Passenger Traffic Competition

The automobile and airplane are the real competitors of the railways for passenger business, the bus being a factor of declining importance. The airplane has a great advantage in speed. The automobile has an advantage over many passenger trains in speed, and the very important advantage that it can start from any place and be used at any time. The railway has a great advantage in safety over both airplanes and automobiles. Air-conditioning is beginning to give the railways an important new advantage over all other passenger carriers. Passenger coaches are being improved in numerous ways, especially their seats. The Pullman Company is steadily improving sleeping cars in various ways.

Nobody can study the schedules of passenger trains generally, however, without realizing how much the speed and frequency of most passenger train service must be improved if it is better to meet automobile competition for both short and long distances. In spite of the speeding up of passenger trains within recent years, the plain fact is that the speed of most passenger trains is too slow as compared with that of automobiles operating on hard-surface highways. In many cases this is due to the needlessly long stops made at stations. The high-speed, lightweight trains being built by the Union Pacific and the Burlington promise to help solve the problem of motor competition. There is also promise in the greater use of single unit cars as a means of increasing the frequency of passenger service without increasing its cost.

Competition from the Motor Truck

Excepting the automobile, the truck is the most formidable competitor of most railways. This is due not only to the fact that the costs of truck transportation are made artificially low by subsidies and low wages, but also to the fact that in many cases truck transportation is more convenient than railway transportation, because the truck can be loaded at any time at the door of the consignor and moved rapidly and directly to the door of the consignee. How long the public will tolerate the movement of large trucks at high speeds over congested highways, with all the public cost and danger that it causes, is conjectural.

Meantime, among the problems with which railway managers are confronted is that of meeting truck competition with service equally expeditious and convenient; and it is a problem that cannot be solved merely by speeding up freight trains, or also by giving store-door delivery, because this does not eliminate such delays as those incurred in transferring freight from trucks to cars and from cars to trucks at points of origin and destination. The solution of the problem may be found in some of the numerous kinds of equipment being experimented with to so co-ordinate rail and truck service as to make the truck-rail-truck movement of freight virtually continuous. It may also be partly found in railroad freight service rendered with lighter equipment and more frequent trains.

What Would a Hill or a Harriman Do?

The principal factors in the problem which must be solved to cause a renaissance of railroad transportation now seem plainer than they did a few years ago. Much in the way of rehabilitation must be done as rapidly as practicable to repair the ravages caused by the terrific reductions of capital and maintenance expenditures made during the last three years. There must be much investigation, study and experimentation to determine the extent to which "scrapping" and joint use of existing facilities are justifiable, to determine the best means of increasing the speed, frequency and convenience of railway service, and of railway service co-ordinated with other kinds of transportation service while actually reducing its cost. The present railroad problem is, in many important respects, virtually a new one, in fact, it is new in so many respects that it might almost be said that the solution of it is to be found in the answer to the question as to what a Hill or a Harriman would do if he now had the opportunity, incentive and capital to create an entirely new system of transportation.

One means of solving the railroad problem which has strong advocates is that of co-ordinating them for the purpose of effecting large economies by the elimination of duplicate and competitive facilities and service. To

accomplish this purpose the advocates of the Prince plan would consolidate all the railways into seven or eight large systems. These proposals raise a number of important questions. One is, as to how much traffic will be available for the railways when general business revives, especially if government policies are adopted which will equalize the terms of competition between them and other carriers. It would appear that those who make claims, which I have heard and read, that 40 per cent of present railway facilities are not needed, give very inadequate weight to the fact that the general business of the country probably is 40 per cent less than it was four years ago. Fair legislation and improvement in their facilities will enable the railways to recover some of the traffic that has been lost to other carriers and the true measure of the facilities they need is the amount of traffic they should be expected to handle when general business is good.

Another question raised by plans for co-ordination and consolidation is as to how much railroad service the public will insist upon having. It is easy to make figures estimating the savings that could be accomplished by drastic reductions of facilities and service and the re-routing of traffic, but attempts to carry out such plans would encounter strong opposition from communities, shippers and railway employees who would be affected. Undoubtedly substantial economies can be effected by reasonable railway co-ordination, and much larger economies could be effected by co-ordination or consolidations which disregard all the demands of the public for service, but, after all, the railways do exist principally to render the kind and amount of service that the traveling and shipping public needs, and must consider even the public's demands as well as its needs. Human nature must still be considered, even in dealing with economic problems. Furthermore, the more railway service is reduced the more difficult it becomes to meet the competition of other carriers.

The railroad problem involves much more than is dreamed of in the philosophy of those who propose to solve it entirely by means which would reduce operating expenses. Whatever economies may be made by co-ordination or consolidation, it will still be necessary, if the service of the railways is to be adequately maintained, for needed reductions of operating expenses to be made in future principally as they have been in the past—namely, by improvements which will make it possible to reduce operating costs.

Merchandising Transportation

Probably there is no other part of railroading in which changes in thinking and methods have become so essential as in the selling of service. The railroads apparently are the only large industry in this country in the nomenclature of whose organizations the word "sales" never occurs. Although it is said there is nothing in a name, I believe it is significant that, while railways have "traffic" departments, "traffic" officers, freight agents, passenger agents, freight solicitors and passenger solicitors, they have no men in their organizations whose titles imply that they are salesmen. This is probably due to the history of the railways, and the fact their history is no longer repeating itself suggests the thought that organizations, titles and methods might well be altered in accordance with new conditions and requirements.

Throughout the history of the railways until within the last decade their traffic increased, excepting during brief periods of depression, as rapidly as most of them could expand their facilities for handling it. Most stations were non-competitive points. The real competition in transportation was between cities and large towns where there were two or more railroads. In consequence, railroad traffic departments were developed mainly to try to capture through passenger and freight business. Within the last decade the most important competition to which the railways are subject has become the competition of other carriers. It is principally competition, not for their through, but for their local business, and, while railroad competition had become principally competition in service, this new competition is competition in rates as well as service.

One important reason why this new competition has become so effective, and consequently so destructive of railway earnings, is that there has been no such revolution in railway selling methods as is demanded by the revolution in conditions. Organizations and methods created and adopted to enable railways to compete with each other have obviously became obsolete when the main problem has become that of getting people to travel or ship by any railroad at all.

What is "real selling" in any business? It is something that begins at the top and goes down through the entire organization. It is primarily a problem of management. First, it is necessary to make something that is saleable, and if the thing made cannot be sold, there is plainly something wrong with it or with the methods used to sell it. Nobody appears to be quite wise enough to anticipate as yet all the changes in facilities and service that will be necessary to make railway transportation as saleable as it used to be. The problem of making it more saleable must be solved by the co-operation of those who have to sell the service with the technical and operating officers who have to provide it.

Whether there will or should be a reduction of the effort and expenditures made by the railways in competing with each other, it is plain that there should be a large increase in the efforts and expenditures made by them, jointly and severally, to sell their service in competition with the service of other carriers. There are many thousands of children growing up in this country who have never traveled on a train. Many thousands of persons are using their automobiles because they think they can make trips cheaper in that way than by train, when the reverse is true. Thousands of farmers are shipping their live stock by truck rather than by train because they think this is cheaper, when the reverse is true.

Joint Advertising Campaigns

The railroads should carry on joint advertising campaigns to educate the public regarding the superior safety and other advantages of traveling by rail. By actual count steamship lines and foreign railways had five times as much advertising in a recent issue of a "quality" magazine to influence Americans to travel abroad as our railways had to influence them to travel by rail in the United States. What kind of selling of American railroad service is that? The newspapers and magazines contain many times as much advertising and publicity material to influence people to use automobiles as they contain to influence them to use the railroads. By actual test members of the editorial staff of the *Railway Age* have ascertained that the ticket agents of steamship companies, motor bus companies and aviation companies make much greater efforts to sell tickets to prospective customers than do the ticket agents of railways.

How much effort do the freight and passenger agents of railways in most local communities make to get people to travel and ship by rail, as compared with the efforts

made by the operators of trucks to get them to ship by truck and by the agents of automobile companies to get them to buy and use automobiles? How many railway managements at intervals call in their officers and employees who are supposed to sell railway service, discuss with them the problems of selling, and furnish them sales information and arguments, as the managements of large industrial and mercantile companies do? The Pullman Company is trying successfully to make salesmen of its conductors. It is high time that the railways also should begin trying to make real salesmen of all their officers and employees who are supposed to get business for them. Giving people the privilege of buying railway service, and actually selling it to them, are widely different things.

The subject announced for this address was "The Future of the Railways." You are likely to consider it a misnomer, because I have said very little about the future of the railways, and much about the way their future should be determined. In my opinion it will be determined principally by their officers and employees, and by the great railway equipment and supply industry which serves them, not only by manufacturing for them, but also as a research and development laboratory. The legislation regarding competition in transportation which will be passed by the federal and state governments will be determined largely by the fairness and sanity of the legislation sought by the railways, by the intelligence and energy with which advertising and publicity in its behalf are carried on, and by the support it receives from organizations of railway employees. Fortunately, most railway employees now recognize the fact that it is as much to their interest as to that of the railways to get traffic back on the railways. As to economies in operation, improvements in service and improvements in selling methods these will be determined principally by railway officers, and I have no doubt that they will deal as successfully with present and future conditions as they have with past conditions.

I am optimistic regarding the results of the work being done by Co-ordinator Eastman and his staff, because they are men of experience and ability who are showing a disposition to try to ascertain the real facts regarding the entire transportation situation and problem, and to recommend measures the adoption of which will be in the public interest; and the railways have nothing to fear from men who try intelligently and sincerely to bring about a solution of our transportation problem which will be in the public interest. I have little fear of government ownership because there is little public sentiment in favor of it, and because the government already has such a huge and increasing indebtedness that its acquisition of the railways would threaten it with bankruptcy, even if it could finance their acquisition, which seems improbable.

The rapid upturn in business which began immediately after the banking moratorium and continued throughout July, has been followed by a recession, but business is still better than a year ago, and there seems good reason for hoping that, owing to natural economic causes, its improvement will be resumed after it has become adjusted to various artificial government measures which probably have caused the recession. On the whole, therefore, it would appear that we can reasonably regard the future of the railways with considerable optimism. This nation has recovered from other long and severe depressions, and subsequently enjoyed unprecedented prosperity, and I am old-fashioned enough to believe that in this regard history will again repeat itself, and that the railways will so adapt themselves to the new conditions that they will enjoy their share of the new prosperity.

Report on Binghamton Collision

THE Interstate Commerce Commission has issued the report of W. P. Borland, director of the Board of Safety, dated October 7,—about 10,000 words—on the rear collision which occurred on the Erie at Binghamton, N. Y., on the evening of September 5, when 14 passengers were killed, and 31 passengers and one employee were injured. Of the passengers killed, 11 were employees of the road, or members of their families, destined for their homes in Susquehanna, 22 miles east of Binghamton.

A brief account of the collision was published in the *Railway Age* of September 9. Eastbound passenger train No. 8, delayed by a switching freight train, was obliged to run slowly for about two miles east of the station, and was run into by a following milk train of which the engineman, cautioned by a yellow signal at BD, neglected to keep his speed under control.

The signals involved in the inquiry were located as shown in the sketch, signal No. 214.2 (A) being 11,759 ft. west from the point of collision; the signal at Liberty street (B), 7980 ft., and that at BD (C), 5962 ft. from the point of collision (D). Signal 212.2 (E) was 893 ft. east of the point of collision. This latter is a one-arm three-position, upper-quadrant semaphore. The interlocked signals at Liberty street and at BD are two-arm semaphores, the upper arm being three-position, and the lower, in each case, a non-automatic, calling-on signal, showing either red or yellow, never green. Signal 214.2, cannot indicate proceed unless the home signal at Liberty street shows proceed. The automatic train stop, of the intermittent induction tvpe must be forestalled in order to pass adverse signals. The grade is slightly descending.

The milk train, third No. 2, followed the passenger train, No. 8, from Binghamton station, passing the station at 7:18, two minutes behind No. 8. The passenger train, which had been standing about one minute when it was struck by the milk train, consisted of eight cars, of which the fifth, sixth and eight were of steel-underframe construction, the other cars being of steel. The milk train consisted of 19 cars. It had waited about 10 minutes west of the station, while No. 8 was doing its station work. In the collision the rear car of No. 8 was crushed for a distance of several feet, and the front end of the seventh car overrode the underframe of the sixth car, the latter being the coach in which the fatalities occurred. This car was telescoped a length of 47 ft. The seventh car in the milk train was destroyed, but there was not much damage to the other cars in that train.

From the voluminous record of testimony at the hearings the following salient points are taken.

The engineman of No. 8 said that the force of the collision drove his engine ahead about four or five feet, the brakes being off at the time. Engineman King, of the milk train, admitting that he received an approach signal (not a clear signal) at BD, said he saw the green markers of the freight standing on the siding, and then took it for granted that, as he had not been flagged, train No. 8 had kept on moving, as was usually the case, and he expected that he would be stopped at signal 212.2. The thought did not enter his mind that train No. 8 had stopped for that signal. He admitted that he was rounding the curve too fast to be able to stop within the distance he could see.

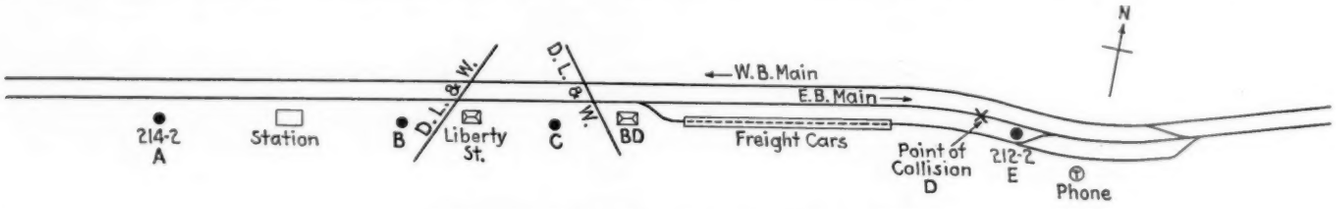
The road foreman of engines had examined King periodically since 1917, and had known him for 42 years; knew that he never used tobacco or intoxicating liquors.

He was specially examined prior to taking the milk train run last August. King then made two trips on the milk train for special instruction, with satisfactory results. Immediately after the collision, King, answering the road foreman's questions, said that he "had got too bold with the speed." The brakes of the milk train were found in good condition.

Questions concerning the use of the main track by freight train No. 90, and by the switcher, when No. 8 was almost due, brought out the fact that trains are run by signal indication, so that there is no time-table superiority. The operations of the switch engine, taking cars to and from freight No. 90, were subject to much questioning and criticism, but the yard men said they had not been forbidden to do the work as it was done in this case.

In a test made on the evening of September 11, it was found that the engine of an eastbound train could have had a clear view of the markers on train No. 8, for a distance of 1300 ft.; but Engineman King said the cars on the siding were farther east on the night of the collision, and he estimated that the markers could not have been seen on that night farther back than 600 ft.

A test was made on September 19 to see how far a flagman could go back in 45 seconds; how far in 60 seconds; how far in 75, and how far in 90. For the longest time, the distance measured was 671 ft., but Flagman Morris said that he was satisfied he did not get back that far, and he finally concluded that 415 ft. was about the point he reached.



Collision at Binghamton, N. Y., September 5, 1933

Location of Signals, with distances from point of collision: A, 11,759 ft.—B, 7980 ft.—C,—5962 ft.—D, point of collision—E, 893 ft.

Conclusions

The conclusion of the report, filling five pages, places the primary blame on Engineman King, but goes into considerable detail as to the responsibility of others. King had to forestall at both Liberty street and BD. He worked a light throttle after passing BD, and said that he shut off at the curve, 843 ft. short of the standing train, but the fireman's testimony did not confirm this. "But," says the report, "in any event, King saw signal 212.2 as displaying stop." He assumed that this was because No. 8 had passed on into the next block. "He knew what the calling-on signal meant, but allowed himself to be misled by what he *assumed* was the situation."

A conductor who was dead-heading on train No. 8, looking back after the collision, was able to see lanterns at the rear end of the milk train, indicating that there was nothing to obstruct King's view for a distance of more than 900 ft.; and it is held that Engineman King could have seen the rear end of No. 8 soon enough to have stopped; so that besides violating the speed rule, he "had failed to maintain a proper lookout after passing the freight cars."

As train No. 8 had been moving for a considerable distance at reduced speed, the conditions called for obedience to Rule 99, requiring lighted fusees to be thrown off at proper intervals; and in particular, Flagman Morris is censured for not throwing off one at the end of the long tangent. He continued with his "clerical duties" inside the parlor car, when he should have been out on the platform, at least by the time his train had slackened to pick up the flagman of the switching train which occupied the main track.

The engineman of No. 8 is criticized for neglecting to sound the whistle for the flagman to go back, his speed having been slow for a considerable distance before being flagged by the switch crew. He finally sounded the whistle after he had moved several hundred feet ahead.

The conductor of No. 8 is censured for leaving the protection of his train wholly to the flagman and the engineman.

The fireman on the milk train, being a man of 20 years experience, and having been promoted 14 years ago, ought to have been thoughtful enough to cross over to the right side of the engine, where he could have seen what was going on ahead of his train.

The practice of using the main track for switching operations on the time of important passenger trains is open to criticism, and, says the report, it does not appear that there was any necessity for the switching operations ahead of train No. 8 in this case. . . . "Operating officers are assuming a grave responsibility for which no excuse can be found when they authorize movements of this kind."

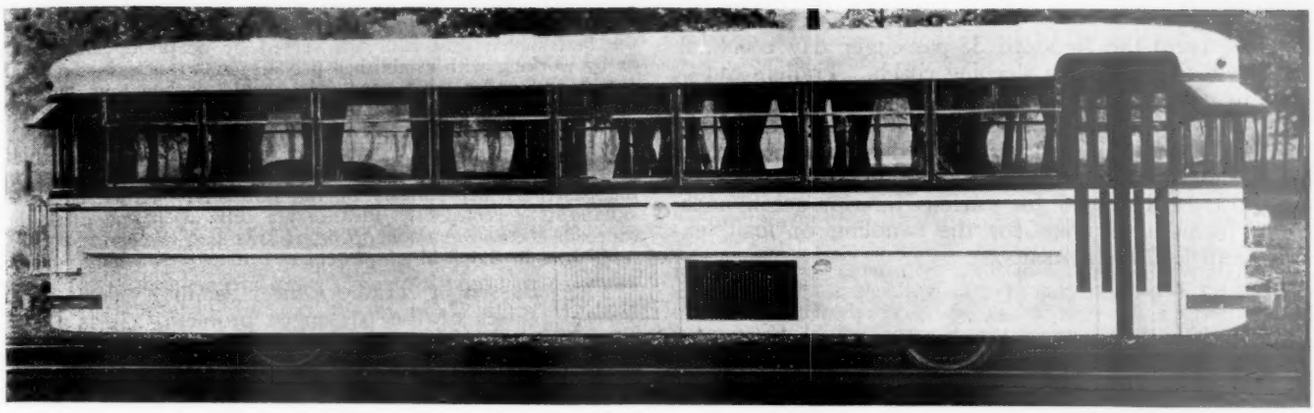
The underframe of the sixth car, in which most of the casualties occurred, did not fail. (Nothing further of special consequence is said concerning the behavior of the cars.)

The report finds no fault with the use of the calling-on signal. It is customary to use this to keep trains moving as well as practicable in order not to block the D. L. & W. crossing. The automatic train-control apparatus functioned properly.

Engineman King was employed as a fireman in 1891; promoted to engineman in 1902, and qualified for passenger service in 1914. All of the other employees on the various trains were experienced men.

In conclusion, says the report, "the record of this case does not do credit to the Erie Railroad, for there have been too many employees who failed in one way or another to perform their duties to the fullest possible extent. Such a situation is a reflection on those responsible for the proper functioning of the operating department and justifies the recommendation that greater efforts should be made in the way of instruction and supervision."

THE FIRST RAIL-AND-AIR-AND-RAIL-AND-AIR shipment handled in the air-express service of the Railway Express Agency was recently moved from Waterbury, Conn., to Grand Rapids, Mich., being afforded an overnight service which involved four distinct operations. Dispatched in Railway Express Agency air service, the shipment went via the New York, New Haven & Hartford and the Pennsylvania to Newark (N. J.) airport; via United Air Lines express plane to Toledo; via Michigan Central to Detroit, Mich., and via Kohler Aviation Lines to Grand Rapids. Of the total distance of 796.2 miles the rail haul comprised 255.2 miles and the air operation 546 miles.



F W D 35-Passenger Rail Coach

F W D High-Speed Rail Bus

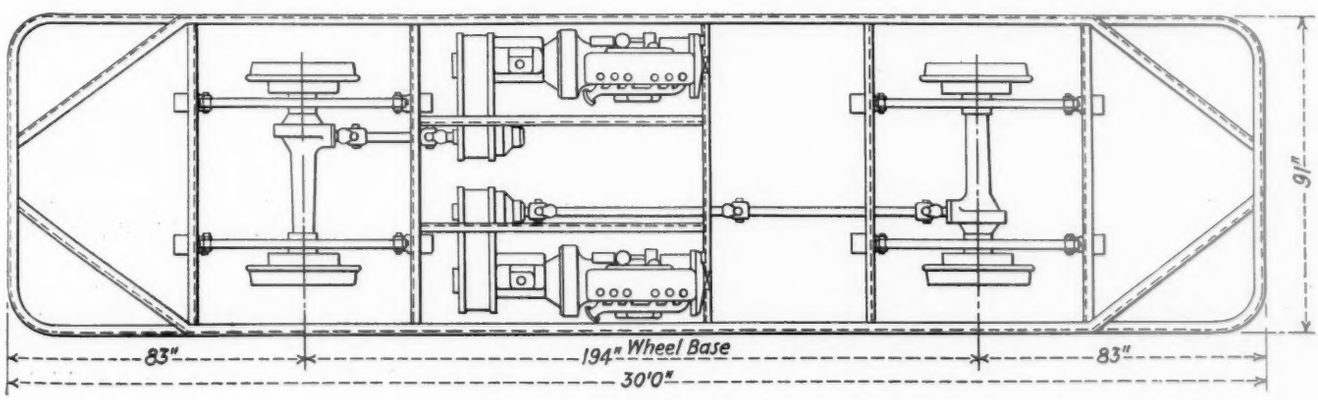
A 35-passenger rail coach with rubber insert wheels driven by two 86-hp. motors which deliver power to separate axles

A GASOLINE-POWERED rail coach of the bus type, accommodating 35 passengers, has recently been designed and built by the Four Wheel Drive Auto Company, Clintonville, Wis. The particular model shown in the illustration is 30 ft. long and 7 ft. 7 in. wide and is powered by two 86-hp. gasoline motors driving on separate axles. With this power equipment the coach is said to be capable of attaining speeds in excess of 70 m.p.h.

Each of the two axles is driven by one motor through a separate three-speed transmission. The controls to the individual drive are synchronized and manipulated through a single set of levers in the operator's compartment. Either drive unit may be shifted into the neutral position, permitting operation of the coach at a modified rate of speed as a two-wheel drive in the event that one power unit should be temporarily disabled. A high-speed reverse mechanism has been embodied in the power transmission system which functions through all of the transmission ranges and permits the car to be driven at equal speeds in either direction. The axles are of the full floating, heavy-duty type equipped with conventional automotive differential assemblies. The differentials in the axles of this car are expected to have an advantage from the standpoint of rail operation, as they prevent wheel climbing and add to the flexibility of the power transmission system.

The four-wheel drive is the principal advantage claimed by the builders of this type of bus in that it permits safety at high-speed, plus the fact that all four wheels function as traction wheels, giving the car unusual acceleration, and help maintain adhesion by the distribution of the driving power. A test run was made on a southern railroad with one axle disconnected to determine the effect of two- and four-wheel driving, and with this particular type of bus it was found that much of the swaying and rocking experienced when driven by only two wheels disappeared when the other unit was cut into operation and the coach driven with power on all four wheels.

The wheels of the F W D rail bus are of the rubber-insert type having a thick layer of resilient rubber securely vulcanized on the inside of a standard contour steel tire. The steel tire with a rubber cushion is then pressed onto a steel wheel center. Several variations of coach body equipment are available in this type of coach,



Plan View of Chassis Showing Arrangement of Power Units

ranging from the standard 35-passenger day coach, illustrated, to a 16-berth sleeping coach. Trailers can be used by equipping the coach with regulation couplers and the power coach has sufficient power capacity to handle one or two trailers with a slight reduction in maximum speed and a small increase in operating cost. The trailers may also be arranged for various interior accommodations, including trailers for the handling of mail, express and l. c. l. shipments.

Passenger Traffic Survey

WASHINGTON, D. C.

TWO questionnaires relating to passenger traffic were sent out on October 13 by the Co-ordinator with personal letters to more than 100 of the larger railroads. These inquiries constitute the first step in a study of passenger traffic that will investigate the volume and nature of traffic, the agencies via which it is now moving, the methods used in handling it, the fares which are charged, the cost of handling, the service requirements of patrons, and the proper sphere of the several passenger carrying agencies.

The "Ticket Office and Agency Inquiry" seeks information concerning the railroad sales organization for securing passenger business and the cost of securing such business, particularly for offices located apart from stations. This questionnaire is to be answered upon behalf of each individual railroad or railroad system, including as a unit all operating companies under a common management or control, but excluding water carriers.

The passenger traffic officer inquiry propounds the following questions:

1. *Passenger Solicitation.* Can you suggest specific ways by which passenger sales methods can be improved, such as (a) better selection and training of solicitors, (b) improved methods of compensation, (c) revised systems for judging effectiveness of individual solicitors, (d) better co-ordination of sales and advertising efforts, etc.?

2. *Co-operative Sales Effort.* Do you believe off-line offices of railroads serving same region should be combined into consolidated information and development bureaus with joint advertising, etc.? What other forms of pooled sales effort would result in either increased efficiency in traffic solicitation or material economies?

3. *Bus Competition.* How can railroads best meet bus competition? In what ways do you think it possible for bus service to be co-ordinated with train operations so as to make possible an improved service to the public? What do you consider the proper sphere of service of the bus to be?

4. *Automobile Competition.* How can the competition caused by the increasing tendency to use the automobile for long distance travel be met by the railroads? How can the desire of rail patrons to have available flexible transportation on arrival at destination be satisfied? In brief what can be done to win back motorists to train travel?

5. *Airplane Competition.* How can railroads meet the growing competition of the air lines? Are there ways in which air service and rail service can be co-ordinated in a manner that will be beneficial to the railroads? What is the proper sphere of the airplane in the field of passenger transportation?

6. *Excursions and other Reduced Rates.* How can the multiplicity of excursion and other special passenger rates be simplified while still providing for such occasions as you consider necessary? Should the constant or "quantity" traveler, such as buyers, business men, traveling salesmen, etc., receive a discount or reduced rate and if so on what basis? What provision should be made for family or party rates?

7. *Service and Equipment.* What improvements are essential or desirable in passenger service at stations, on trains, etc.? What can be done to make passenger service more attractive or useful to patrons? What considerations should be taken into account in planning new equipment?

8. *Tours and Tour Services.* To what extent does the offering of all-expense tours and other forms of so-called "packaged travel" tend to stimulate or increase tourist travel? Are the best int rests of railroads served by operating such tours or by working with established private tour agencies? To what extent and under what conditions should private tour bureaus receive commissions? Is the Tourist Travel Clearing Agency a satisfactory institution? In what ways could it be improved?

9. *Other Suggestions.* What do you believe to be the chief sources of waste or the principal causes of any inefficiency in the passenger departments of the railroads? How can these situations be remedied? Please state fully what you think the railroads themselves ought to do, if anything, to correct present conditions in the field of passenger traffic.

The "Passenger Traffic Officer Inquiry" deals with several phases of the passenger problem. It is to be answered personally by officers in intimate contact with passenger work whose opinions it is felt will be of great assistance in making this study. The replies will be regarded strictly as expressions of individual opinions, not as answers expressing authoritative corporate views.

Inquiries similar to that prepared for traffic officers will be sent out within a few days to others outside of railway organizations who are interested in passenger problems.

Standards for Drilling Ends of Rails

WASHINGTON, D. C.

IMMEDIATE adoption by all railroads of standards for drilling the ends of 131-lb. and 112-lb. rails was recommended by Co-ordinator Eastman in a communication sent on October 12 to the carriers' Regional Co-ordinating Committees. It supplements the communication which he sent on October 6 in regard to various standardization projects. It was there pointed out that the patent situation complicated standardization of rail joints and other accessories. It appears, however, that there is an improvement upon which all are agreed and which can be adopted without delay, namely, the adoption of standards for hole diameters and spacing in rail ends. The Co-ordinator in this supplementary communication says:

On October 6, 1933, I referred to you six projects for your consideration and action. Since that date the Rail Committee of the American Railway Engineering Association has reached an agreement on standards for joint bars for the 131-pound and 112-pound standard rail sections. These standards will be recommended by the Rail Committee for adoption as A.R.A. standards under the usual procedure.

In view of the present situation in regard to proposed purchases of rail and rail joints, it seems advisable to defer recommendations by the Co-ordinator on the adoption of a single cross-section of joint bar, but to secure immediate adoption of the Rail Committee standards for hole diameters and spacing in rail ends. On present information, I believe that the number of existing different types of joint bars applicable to 131-lb. and 112-lb. rails is small, and that delay in placing orders for joint bars will be avoided if no restriction is placed on the selection of bars to be used with rails now proposed to be purchased. It is to be understood, however, that recommendations may be made in future looking toward further reduction in the variety of joint bars. Such recommendations would be determined largely by the action of the American Railway Association in respect to standards developed by the Rail Committee.

I now recommend the immediate adoption by all railroads of the following standards for drilling the ends of 131-lb. and 112-lb. rails:

1. Holes to be 1⅛ in. in diameter.
2. Center of first hole to be 2½ in. from end of rail; center of second hole to be 6½ in. from center of first hole; if third hole is used its center to be 6½ in. from center of second hole.
3. Height from base of rail to horizontal center line of holes to be
   (a) 3 3/32 in. for the 131-lb. rail.
   (b) 2⅞ in. for the 112-lb. rail.

I. C. C. Denies Astor Director Application

WASHINGTON, D. C.

WITH four commissioners dissenting, a majority of the Interstate Commerce Commission has taken a step further than the commission has heretofore gone in its restrictions on interlocking directors by denying the application of William Vincent Astor for authority to hold the position of director of the Delaware & Hudson Railroad Corporation while continuing to hold the positions of director of the Great Northern and of the Illinois Central, pursuant to prior authorization. Authority to act as director of the Great Northern and Illinois Central was granted to Mr. Astor on January 27, 1927, prior to the commission's approval of a general plan for the consolidation of railroads. Under this consolidation plan the Great Northern is assigned to system No. 12, Great Northern-Northern Pacific; and the Illinois Central is assigned to system No. 10, Illinois Central. Later the plan was modified in so far as it concerns the properties in eastern territory, excluding New England. Under this modified plan the Delaware & Hudson is left for the present as an independent system, without allocation to any other system.

Denial was based on the commission's statement in its report in *Consolidation of Railroads,* that "the continuation or acquisition of inter-system interests directly or indirectly through holding companies, stock ownership, or otherwise, will be inconsistent with the independence necessary to true competition. Carriers will, therefore, be expected to observe this requirement in submitting proposals for consolidations and to cooperate in establishing the desired status." The majority report said in part:

> Actual independence of the systems in question would not be promoted by permitting the same persons to serve upon the boards of directors of two or more major carriers when such carriers are important members of different systems under the plan.
>
> The presence or absence of competition between the respective systems is not of controlling importance. Under the law, unless we grant the specific privilege, a person may be an officer or director of one carrier, and no more. Before we make the exception in favor of an applicant he is to make an affirmative showing, sufficient to convince us that public and private interests will not be adversely affected. Upon the applicant rests the burden of showing these facts. In this instance, in view particularly of the applicant's existing positions as director of two important carriers in the West and South, we cannot say that the showing he has made convinces us that he may in addition properly serve as director of a third important carrier in the East. It is not enough to say we can see no harm in what is proposed. It is essential that we be able to say beyond doubt that neither public nor private interests will suffer.
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> It is a matter of common knowledge that in a sense each railroad competes with every other railroad in the country. They differ only in degree. Actual paralleling or connection of tracks is not a necessary accompaniment of competition. Connections through boards of directors and traffic officials selected or influenced by them are much more important. With respect to consolidations the Delaware & Hudson has been left floating, and properly so, in our plan. Negotiations regarding consolidations have been proceeding without interruption, and it is difficult to foresee just when the properties here concerned will again reach a critical stage in some consolidation plan. When that time comes it is important that a director shall not be asked or permitted to sit on both sides of the table. In fact, the preliminary negotiations leading up to the presentation of a "plan" may be the most important. At such times the connection through persons will be decisive rather than the direct connection through steel rails. And these considerations should prevail, notwithstanding the high character of individual applicants. The principle is vital, and departure from it will inevitably tend to concentrate control of all the railroads in the country, irrespective of the number of groups contained in any final plan which may ultimately prevail, in the hands of a very small group of men.
>
> From this it does not necessarily follow that every existing board of directors, perhaps of long standing, which violates this principle must forthwith be brought into conformity with it. Corrections should be made as and when shown to be in the public interest. However, when new applications are presented conformity should be observed.

Commissioner Mahaffie, in a dissenting opinion said:

> This denial appears to be based solely on the principle announced by the Commission in *Consolidation of Railroads, supra,* that in order for competition to be preserved as fully as possible the systems proposed by us, or any others that may be formed, should be independent of each other. The further discussion in the report obviously is an attempt to support that announcement and to apply it to this situation. The fact that we made such an announcement as part of a plan of consolidation which has not been carried out does not, for the present at least, make the statement a final and immutable standard of the public interest. If competitive systems such as we set up are in the future created, they should, of course, be independent. As that situation is in no way before us now, this application should be determined on its merits. The applicant is a director, with our approval, of the Great Northern and Illinois Central. He is a director of the Delaware & Hudson Company, which owns the entire capital stock of the Delaware & Hudson Railroad Corporation, which he now seeks our authority to serve. The preservation of competition being the object sought, the showing as to that seems to me important. The applicant's statement, under oath, is:
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> > There is no relationship, operating, financial, competitive or otherwise, between the said Great Northern Railway Company, Illinois Central Railroad Company and The Delaware & Hudson Railroad Corporation, or any two of them.
>
> This is a part of the showing which we have prescribed in accordance with the act. As a tribunal possessing no authority to decide matters before us according to whim or caprice, we should accept that statement unless it is, in some way, contradicted. As discrediting it the majority rely on what is said to be common knowledge, "It is a matter of common knowledge that in a sense each railroad competes with every other railroad in the country." Perhaps a sufficient answer to this is that if it be correct, Congress did a remarkably useless thing in giving us the power to permit one man to serve more than one carrier, while, at the same time, attempting to preserve competition among carriers. A great many courts in passing on what constitutes competition between railroads have evidenced a singular lack of what the majority find to be common knowledge.
>
> No reason, aside from the application of the principle as to independence, above referred to, is assigned for the denial. That application, since there is no competition to be preserved, I believe to be a mistaken one. If it be sound, I see no escape from the conclusion that this applicant should be required to discontinue his service with one of the two roads he now serves. If there is competition between the Delaware & Hudson and either the Illinois Central or Great Northern, there must at least equally be competition between the two last named. Our orders run "until the further order of the Commission." If membership of this applicant on the board of the Delaware & Hudson Railroad Corporation necessarily would affect adversely the public interest, it is difficult to see the justification for continuing in effect our orders permitting other directors of the Corporation to serve on the boards of directors of such carriers as the Illinois Central, Southern Pacific, Union Pacific and Kansas City Southern, all of which are assigned to separate systems. The dangers the majority envision are at least as serious from interlocking that now exists as from that proposed. If, as is said, "the principle is vital," our orders permitting this dangerous practice should not be allowed to stand.
>
> Consolidations can only be effected in accordance with our plan as it now exists, or as we may modify it. The Delaware & Hudson is a complete and independent system as the plan now stands. It cannot be consolidated with the Great Northern or the Illinois Central unless and until we change our plan to permit that to be done. The danger, therefore, that this applicant may be "asked or permitted to sit on both sides of the table" seems sufficiently remote. The reasoning in this regard may have relevancy as to individual carriers which are parts of a single system under the plan. It is totally irrelevant so far as this application is concerned.
>
> I submit that no applicant under this provision of the law can make such proof as will pass the majority test if it be actually applied in other cases. Congress might, if it saw fit, forbid any person to serve more than a single carrier. For us to do so, or to lay down standards that necessarily have that effect, is, as I see it, the assumption of power we do not possess.

Commissioners Aitchison, Brainerd, and Tate concurred in this expression.

Motor Transport Section

The Story of the Pennsylvania Greyhound Lines

History, present organization and operating practices of the Pennsylvania's motor coach operating affiliate—Co-ordination found to pay

By S. R. Sundstrom,
President, Pennsylvania Greyhound Lines

THE Pennsylvania early recognized the potentialities of the motor bus, and as far back as 1925 laid preliminary plans which contemplated the adoption of the motor bus in common carrier service. Later, it also recognized that the motor bus offered the advantages of flexibility and economy, and that it might be profitably used as a substitute for local train service. Like other railroads, the Pennsylvania was confronted with a serious problem in the operation of various local steam routes, the revenues of which had been steadily diminishing for some years. Unprofitable, and constituting a drain on the profits, the prospects of earning even fixed charges on some local routes appeared remote.

After thorough study of the problem, the conclusion was reached that, if consent to the removal of steam passenger service could be obtained from regulatory bodies, motor buses could be substituted. The result was that applications for the abandonment of passenger trains on some local routes were made to the public service commissions, and authority was granted by these bodies for the removal of steam service and, in lieu thereof, the inauguration of motor coach service. Due to flexibility of service and economy of operation, the Pennsylvania was enabled to save substantial sums annually through the substitution of motor coach service on local routes. Not only was the motor coach called upon to transport passengers, but also baggage, mail and express. The use of the motor coach, therefore, justified its existence in the eyes of the Pennsylvania. Eventually a subsidiary company was organized to operate the motor coach routes. This company was called the Pennsylvania General Transit Company. For the most part, this company held certificates of public convenience and necessity in the state of Pennsylvania.

During the course of the developments just described, the entire country was being dotted with a number of motor coach lines, the majority of them, however, local in character. Many improvements had been made in motor coaches, and their use was more and more extended. With the improvements to the vehicles it was possible to operate coaches for longer distances with certainty and safety, and motor coach operators began to extend their operations.

The Pennsylvania watched these developments with interest, and in 1927 co-operated in the formation of an interstate bus route from New York to Washington, D. C., and from Philadelphia, Pa., to Atlantic City, N. J. This company was called the Peoples Rapid Transit Company, and a contract was made with the Mitten Management Company, Philadelphia, for the management of the operation. Later, the Pennsylvania purchased the Peoples Rapid Transit Company.

Railway's First Affiliation with Greyhound

During 1928 the Pennsylvania made an arrangement with the Motor Transit Corporation (now the Greyhound Corporation) which resulted in turning over to a subsidiary company of the Motor Transit Corporation the operation of local routes across the state of Pennsylvania. This service was co-ordinated with the interstate service offered by the Motor Transit Corporation bus subsidiary, and thus it was possible to transport passengers in both interstate and intrastate service on one bus across the state. Not only were operating costs conserved, with a minimum mileage, but maximum revenues were obtained. This arrangement worked out very satisfactorily to both interests, and established the foundation of the friendly relationship which still exists between the Pennsylvania and the Greyhound Corporation.

The 1928-1929 period witnessed the merger and consolidation of many bus companies, and practically overnight there came into existence a unified bus transportation system that extended across the United States. The pioneers of the Greyhound Lines had been quietly at work, and had succeeded in laying the founda-

A Successful Bus Company

One of the outstanding motor coach systems of the country is that of the Pennsylvania Greyhound Lines, affiliate of the Pennsylvania. Its bus routes extend from New York to Chicago and St. Louis, Mo., and south to Cape Charles, Va., Washington, D. C., and Louisville, Ky., closely paralleling the railway lines of the P. R. R. Its inception, its operating organization and its methods are described in detail in this article by Mr. Sundstrom. —Editor.

tion of this system. As previously stated, in the East they worked in harmony with the Pennsylvania, and a close association was maintained to allow a natural and economic expansion of the bus properties in which each was interested.

Pennsylvania Greyhound Lines Organized

In order to unify the Greyhound and Pennsylvania interests, and to establish a unified system of transportation in the territory of the railway, the two interests agreed to combine their operations, and in April, 1930, a holding company was formed to take over the operating companies involved. Each interest took 50 per cent of the common stock of the corporation, called Pennsylvania Greyhound Lines, Inc., with the Pennsylvania retaining the preferred stock. The identity and corporate structure of each operating company was kept, and operations were conducted as they had been previously, except that unification and co-ordination of the facilities of each of the operating companies followed wherever expedient. When Pennsylvania Greyhound Lines, Inc., was formed, the number of subsidiary companies was nine, but this has since been reduced to seven.

At the time of the formation of Pennsylvania Greyhound Lines, a contract was made with the Greyhound Management Company for the management of the subsidiary operations of Pennsylvania Greyhound Lines. Through this arrangement the natural development of these operations was provided for, and responsibility for the management was placed in the hands of individuals who were thoroughly trained in all phases of bus transportation. At the same time the advantageous features of a specialized organization were obtained.

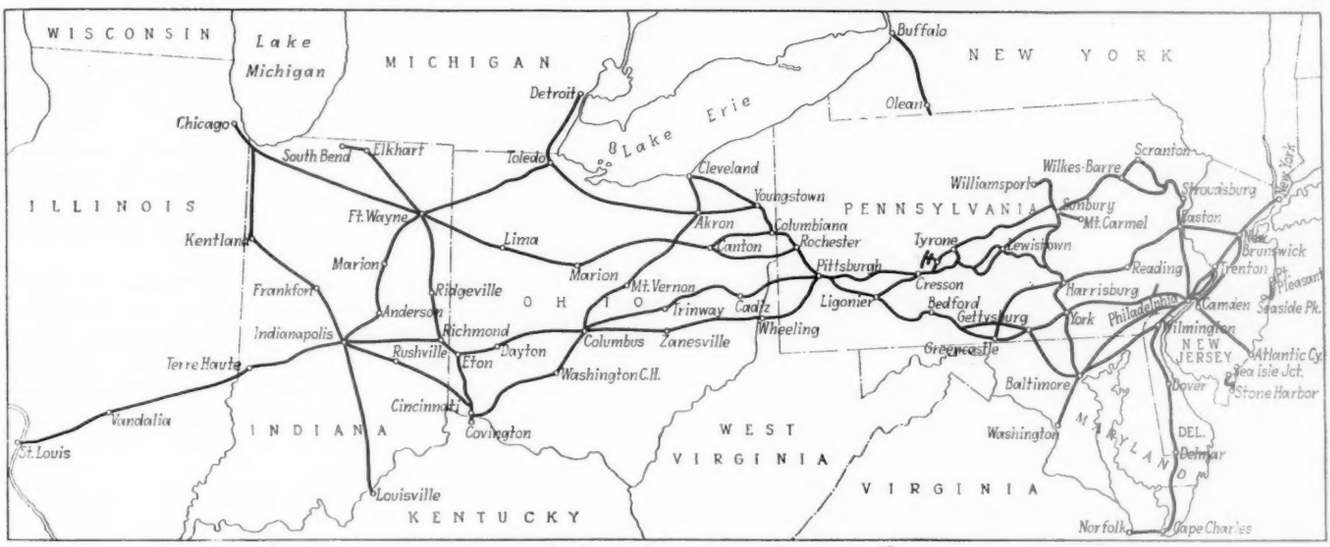
The Greyhound Management Company is purely a management enterprise, and performs services of a highly specialized nature for various bus-operating companies. The purpose of the corporation is to perform the duties of management from a central location, and through interchange of policies, ideas and development within the operating companies, to make them function as a unit while retaining their identities as operating companies.

Extent of Operations

The operations of Pennsylvania Greyhound Lines extend from New York to Chicago and St. Louis, Mo., and south to Cape Charles, Va., Washington, D. C., and Louisville, Ky. In general, the routes closely parallel the railway lines of the Pennsylvania. The routes pass through one of the most thickly populated sections of the country, and, in addition, operate from all of the leading eastern cities. It has been estimated that Pennsylvania Greyhound Lines serve a total population of 20,000,000 people. Over 5,350 route-miles are traversed daily.

During the year 1932, the company operated a total of 17,000,000 bus-miles, and carried 4,500,000 passengers. The average fare of all passengers carried during the year amounted to $1.12. Due to increased business in general, and due particularly to the Century of Progress at Chicago, business for the first seven months of 1933 showed a substantial increase over 1932 in the number of miles operated and the number of passengers carried.

For purposes of operation the company is divided into five regions, namely, Philadelphia, Pa., Pittsburgh, Washington, D. C., Indianapolis, Ind., and Cincinnati, Ohio. Each region is in charge of a regional manager. The larger regions are separated into divisions, in charge of division superintendents, who are responsible to regional managers for their activities. Operating supervisors are stationed at minor locations, which do not warrant the establishment of a division superintendent.

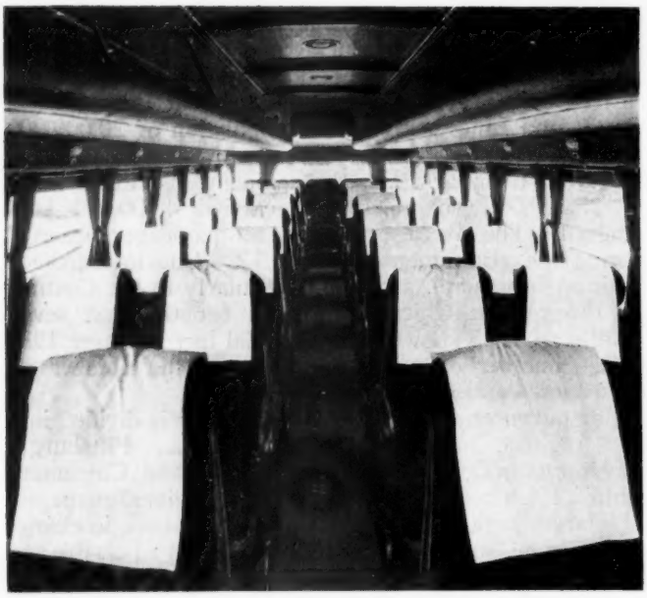


Motor Coach Routes of Pennsylvania Greyhound Lines Which Blanket the Territory of the Pennsylvania

The duties of regional managers are complex and many. Briefly speaking, they have complete charge of all activities of the company in the regions, in addition to being in direct charge of the operations in their territory.

They are held responsible for the hire and supervision of drivers, the allocation of equipment, the safety of passengers, the number of schedules operated, the operation of terminals and the supervision of passenger agents and commission agencies, and have many other duties of a varied nature. Regional managers also assist, and co-operate with, the legal department in the representation of the company before state regulatory bodies. Regional managers report directly to the president.

The regions, of course, form the nucleus of the organization. Due to the fact that the bus industry is still in the early stages of growth, constant changes and improvements are being made. This is particularly true of the operating end of the organization. The most notable feature of operation developed during the last several years has been the assignment of coaches to through runs. This makes it possible to transport passengers longer distances than heretofore without a change of coach or transfer of passengers. Today, pas-



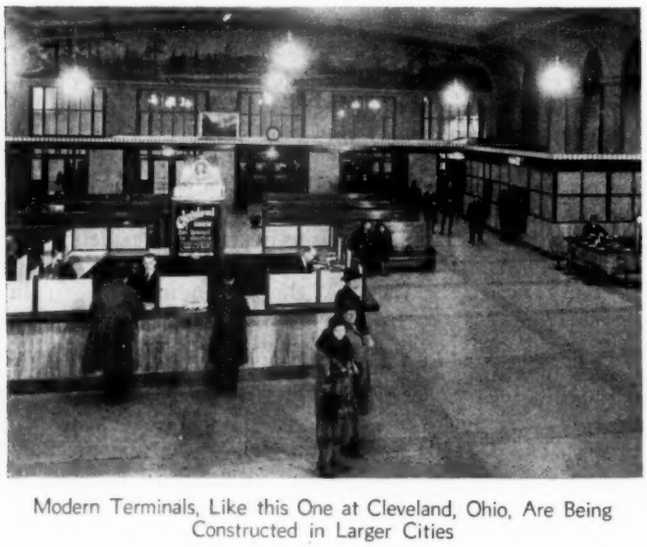
Comfort Is the Paramount Consideration in the Equipment of the Coaches

sengers are carried from Pittsburgh to St. Louis without change.

It is interesting to observe at this point that all schedules are co-ordinated within the company, and also with connecting carriers, so that passengers can be carried, regardless of origin or destination, with a minimum of time lost for transfers. As a matter of fact, the close co-ordination of schedules is one of the features which makes travel via bus so popular in the eyes of the general public.

Efficiency and Safety Emphasized

Pennsylvania Greyhound operates 400 motor coaches of the 33-passenger-capacity type. These coaches are all modern, with reclining seats and interior baggage racks. Through experience, it has been found that the most practical type of coach is the 33-passenger unit, and all coaches, with the exception of a few older models, are of this kind. The peculiarities of bus transportation make it necessary to provide equipment on all routes to accommodate the highest load factor, and the 33-passenger coach seems to have solved the problem. Also, concentration on one type of coach makes it possible to obtain economies in the maintenance end, and tends to greater efficiency in the allocation and maintenance of the entire fleet of coaches. Coaches are allocated so that a minimum of 200 miles per day, or 6,000 miles per month, is obtained. A supervisor of equipment keeps the coaches in their proper allocation and makes sure that they obtain the maximum mileage.



Modern Terminals, Like this One at Cleveland, Ohio, Are Being Constructed in Larger Cities

Various operating conditions are encountered, ranging from mountainous territory in the East to comparatively level land in the Middle West, and various provisions have to be made to accommodate operations to the different topographical conditions experienced through the territory of the company. For example, operation over mountains requires training of drivers which is somewhat different from that given to drivers operating over level or only hilly land. Different grades of oil are required, and, what is more important, the maintenance procedure differs greatly. Climatic conditions also play an important part.

Closely associated with the operating end of the company have been the activities of the safety department. The installation of the safety department marked a distinct forward advance in the development of bus transportation. The accident frequency has been reduced from approximately 10,000 miles per accident to 75,000 miles per accident. Individual regions have established records of 218,000 miles per accident. This department comes under the supervision of the manager of the department of safety and personnel. A feature of the safety department is the conduct of safety contests. These contests run for a period of 16 weeks, the winner of each contest being awarded a safety trophy. Any region winning a safety contest three times is awarded permanent possession of the safety trophy.

Constant stress is laid upon safety; in fact, it may be stated that safety receives more thought and attention than any other aspect of the company's operations. The most effective measures that have been found for the prevention of accidents and the development of the proper spirit and attitude toward safety are:

1. Safety contests
2. Monthly safety meetings
3. Awards of safety buttons for safe driving
4. Star drivership rating
5. Personal investigation of each accident
6. Complete record and history of each driver

The Maintenance Organization

Aside from the operation of coaches in active service, the most important department in the organization is the maintenance department. To this department is entrusted the responsibility of maintaining and servicing the entire fleet and keeping coaches in proper running condition at all times. Company garages are located at strategic points over the system, usually at cities where regional and divisional offices are maintained. The larger garages are located at the following cities: New York, Philadelphia, Washington, Pittsburgh, Cleveland, Ohio, Cincinnati, Detroit, Mich., Chicago and Indianapolis. Smaller garages are located at Harrisburg, Pa., Scranton, Columbus, Ohio, Akron, and Louisville, Ky. At cities like Baltimore, Md., Gettysburg, Pa., and Lima, Ohio, the facilities of independent garages are used.

The size of company garages varies, depending upon the number of coaches operating into the cities. The larger garages have from 40,000 sq. ft. to 55,000 sq. ft. of floor area. The more important garages have been designed to provide for every known contingency, and they are so laid out as to furnish the maximum of efficiency in service and maintenance. Order and cleanliness prevail in every garage. From the time a coach enters a garage after the completion of its run to the time it is ready for the next run, it follows a routine schedule, going first to the wash rack and then to the

grease pit, where it is greased, gassed, oiled, tires checked, wheel alinement checked, batteries watered, and the mechanical condition inspected. From this point it is placed on a brake testing machine where the brakes are checked and adjusted after which it is placed over a service pit, and any necessary service work taken care of. The coach is then polished, windows cleaned and seat covers installed, and with these final touches, the coach is lined up, ready for the next run.

Visitors to the garages are impressed not only with their size, but also with the many features incorporated in them. In addition to the usual amount of storage space, there are a body shop, a paint shop, a blacksmith shop, a battery room, an engine testing room, service pits, wash racks, grease pits and many other innovations and labor-saving devices. Each garage is supervised by a garage superintendent who, in turn, is responsible to the general manager of maintenance. Garage employees are supervised by foremen, who report to the garage superintendent.

As gasoline forms a very important item, it has been found expedient to locate garages, wherever possible, adjacent to railroad sidings, to permit the delivery of gasoline via tank car. Huge storage tanks of approximately 20,000-gal. capacity have been installed in the ground. At smaller garages, delivery of gasoline is accomplished by the use of tank wagons. Coaches are assigned to each garage in the same manner that coaches are allocated to each region. In this manner each garage is assigned a definite number of coaches for which it is responsible for all service and maintenance work.

Minor service work is given to coaches at the completion of each run. In addition to the routine service work, however, all coaches are given a thorough inspection every 15,000 miles, and at every 45,000 miles coaches are subjected to a major overhaul. Coaches usually remain out of service for about one week while they are being overhauled, and in order to insure a uniformly high degree of care, the work is in charge of a special crew of employees. Purchases by individual garages, except in extreme emergency cases, are not allowed, as each garage is equipped with a stock room, containing a complete stock of parts, and, whenever needed, parts may be requisitioned upon order to the purchasing agent.

Terminal Facilities

The absence of federal regulation of the bus industry has tended to retard, to some extent, the natural development of company terminals. However, much progress has been made within the last year or so in improving their appearance and comfort. The last year has seen the construction of large and modern terminals at Cleveland, Columbus, Cincinnati and Washington. Each of these terminals provides off-street loading facilities and contains many conveniences for the comfort of passengers. Other company terminals are located at New York, Pittsburgh, Harrisburg, Norfolk, Va., Youngstown, Ohio, Dayton, Detroit, Wheeling, W. Va., Akron, Chicago and Louisville. At Philadelphia, Baltimore and Indianapolis, commission agencies are maintained.

Although the larger proportion of the gross revenues is received from the largest cities, ample and thorough representation of the company throughout its territory is accomplished through the appointment of commission agents. These agents represent the company in their territory, for which they receive a commission on all transportation sold. At the present time, Pennsylvania Greyhound has over 600 commission agents. The activities of these commission agencies are supervised through passenger agents. Every encouragement is given to them to promote and increase the sale of tickets. They are furnished with complete tariffs and schedules, and through bulletins, etc., the company maintains a close relationship with them at all times.

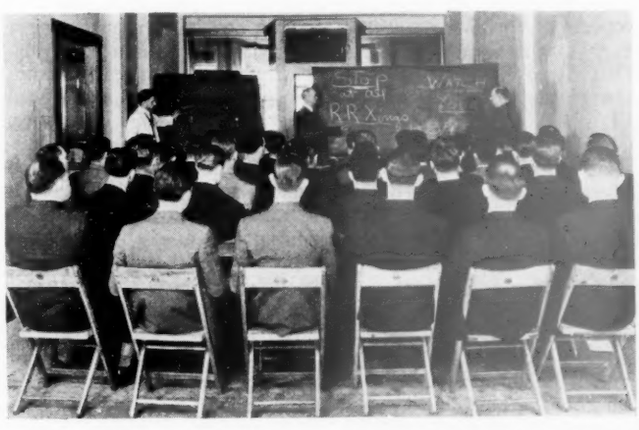
Interior of One of Pennsylvania Greyhound's Modern Garages

An important cog in the efficient operation of the company is the traffic department. This department has jurisdiction over the compilation, printing and distribution of all schedules and tariffs. It likewise supervises the activities of passenger agents, company ticket agents and commission agencies. The printing and distribution of tickets are also a part of the activities of this department.

Advertising Extensively Used

The policy of the company as regards advertising has always been of a forceful nature. Through the cooperation of affiliated Greyhound companies, it has been possible to achieve an advertising policy that is national in scope. It has been felt that the consolidation of advertising efforts on a national scale has done much to make the public "bus conscious," as well as to emphasize the natural advantages and economies of bus travel. As a matter of fact, it is conceded that the national advertising program has done much to remove the prejudices against this new form of transportation. Advertising campaigns are carried in newspapers at all times and advertisements appear with a scheduled regularity. As this form of advertising has been found to be very successful, a large portion of the advertising appropriation goes for newspaper advertising.

Other advertising media, of course, are employed to promote and increase the desire for travel via bus, and



Safety in Operation Is Stressed in Drivers' Schools

attractive literature, carefully executed, is circulated freely throughout the system. Illustrated maps and calendars have been used to good advantage. Through co-operation with affiliated companies, a travel magazine is published, which is distributed free of charge to passengers and to the general public.

Close Co-operation with Railway

Finally may be mentioned the close co-operation of Pennsylvania Greyhound with the Pennsylvania. Wherever it has been found to be of mutual interest, various co-ordinating methods have been placed in effect. For example, at Philadelphia, as well as at several other smaller locations, the Pennsylvania sells Pennsylvania Greyhound Lines tickets, in return for which it receives a commission. Various other arrangements, which tend to co-ordinate the facilities of the two companies, are used successfully, such as the transfer of passengers to trains, etc., in the event of accidents, road delays, or weather conditions which interfere with schedules. Through special arrangements, also, motor coach service has been substituted for steam passenger service on some local routes, this service being performed by Pennsylvania Greyhound Lines for the Pennsylvania.

Communications . . .

Streamlined Train in Manchuria

DAIREN, MANCHURIA.

TO THE EDITOR:

We notice with interest that recent issues of the *Railway Age* contain numerous references to the streamlined train under construction for the Union Pacific. It may be of interest to you to know that the South Manchuria Railway has also decided to place in service a streamlined train, scheduled to run between Dairen and Shinkyo (Hsin-king), a distance of 437.7 miles, in seven hours flat. It will be operated daily in both directions and will consist of a mail and baggage car, one each of first-, second-, and third-class cars, a dining and an observation car. Both the designing and the construction have been undertaken at the company's locomotive works here in Dairen. When placed in service, this train will be not only the fastest in Asia but also the first to be completely air-conditioned.

S. KOBE,
Traffic Office, Railway Department, South Manchuria Railway Company

New Sample A.R.A. Box Car and Frictionless Side Bearings

PITTSBURGH, PA.

TO THE EDITOR:

The first sample A.R.A. box car of the 1932 design has just been finished by the Pressed Steel Car Company, and, judging from its looks, will do justice to the prestige the American railroads enjoy the world over. The car will not stand in the way of further progress since any improved detail can be used, provided a road wants it and provided it does not necessitate a change in the basic car construction. The car in question uses many specialties—roof, ends, doors, door fixtures, couplers, draft gears, brakes, brake beams, uncoupling devices; it also provides for the application of improved side bearings as well as for the use of the old friction blocks. Strange to say, however, the sample car has friction blocks.

The easier the truck swivels on curves, the nearer it comes to properly performing its duties. Even a day laborer in moving a heavy machine uses rollers to overcome the sliding friction. With a free swiveling truck, it is clear that there is less pressure between the rail and the wheel flanges; this results in reduced rail wear, reduced wheel flange wear, reduced train resistance, and reduced number of obnoxious derailments.

Even in the early days of railroading these features were well understood and many tests were made—some in the laboratory, some on the road, and there were also long time service tests. There are now only two large railroad systems in this country which do not use some type of improved side bearing. One of these roads—very progressive, generally speaking—had a great deal of trouble with derailments, especially in the mining districts. After trying out one type of frictionless side bearing on 300 cars for an extended period, it found them beneficial and wanted the manufacturer to let the company make them in its own shops. This, in fairness to the other roads and his own business and establishment, the manufacturer could not allow. Since then this road has been averse to using frictionless side bearings.

The second road for many years used such bearings on passenger cars, but not on freight, but since the engineer in charge was pensioned a more progressive spirit exists.

Rail Wear.—It is, of course, hard to give exact figures, but the first road of the two above mentioned, by its own statement, claims that it renews the rails on one of its long curves every ten months, while on a tangent they last twenty years. These figures are simply staggering, when we consider the unwarranted expense which could be avoided, or at least could be greatly reduced by the use of an up-to-date side bearing.

Wheel Flange Wear.—E. W. Test, assistant to the president of the Pullman Car & Manufacturing Corporation, as quoted in the Railway Mechanical Engineer of September, 1933, showed convincingly how important it is to do away with the friction at the side bearings to save the wheel flanges, and thereby save money.

Train Resistance.—All sorts of tests have been conducted during the last fifty years to determine the reduction of train resistance on curves by the use of frictionless side bearings in place of friction blocks; these resulted all the way from negative results to gains as high as 15 per cent. This indicates that tests are often made without considering all the conditions. The writer knows of tests with dynamometer cars on short reverse curves, too short for the wheel flanges to run up against the rails. He knows of tests partly conducted on dry rails and partly on wet. Low gravity loads are sometimes used, and all such oversights not only nullify results, but even lead to false conclusions.

The best and fairest test so far known was made by a railroad, as described in the *Railway Age* of May 17, 1918. In that test the same car as used throughout, drifting down a long continuous curve under the same weather conditions. There was a saving of power on curves of 10.4 per cent for the frictionless side bearings as compared to the plain bearings. Such an item is most important in locomotive rating and coal consumption.

Reduction in Derailments.—The best record in this respect no doubt came from a superintendent of motive power who uses very heavy equipment, maximum train loads of coal on a road with many curves, when he stated that for three years he did not have a wheel on the ground, a record he is very proud of. To what extent the improved side bearings he is using have helped to accomplish this result is not known, but the fact remains that the road has saved a great deal of money because of eliminating delays in operation.

Owing to the many years of conscientious endeavors by the manufacturers and their use of special machinery, the increase in cost for a frictionless side bearing is now negligible. Sometimes the friction blocks cost even more and on the A.R.A. sample car, for instance, an up-to-date frictionless side bearing could have been applied at practically the same cost. The early designs of frictionless side bearings were entirely too delicate to stand the severe service, but of later years they have been made simpler, stronger and better, so that the repairs will be reduced to a minimum; in fact, we have bearings, thanks to the untiring efforts of the manufacturers, that will last as long as the car itself. Why not make use of them on later A.R.A. sample cars?

A. STUCKI.

NEWS

Eastman Seeks Shippers' Views on Water Transport

One question relates to desirability of charging tolls for the use of inland waterways

Co-ordinator Eastman has sent an inquiry, prepared by his Section of Research, to the approximately four thousand members of his shippers' advisory committee, for the purpose of developing information with respect to the uses made of domestic water transportation facilities, viewpoints with respect to the relative merits of water and other means of transportation, the possibilities of improving water transportation service and of co-ordinating the various transport agencies, and the need for stabilizing and regulating carriers by water. This committee is made up of some 3,500 traffic managers of representative industries and commercial enterprises and traffic officials of chambers of commerce and similar organizations. It comprises individuals who do not use water transportation as well as those who do.

One of the questions is as to the desirability of charging tolls for the use of inland waterways. Some of the other points on which information is desired are:

Principal points between which you ship and/or receive freight moving wholly or partly by domestic water lines.

Extent to which the location of your plant or plants has been influenced by the availability of water transportation.

The extent to which you control the routing of your shipments and any reasons for lack of full control.

The several routes of service, i.e., coastwise (Pacific, Gulf, or Atlantic), intercoastal, Great Lakes, and the various inland waterways, or combinations of the foregoing, and approximate percentage via each waterway.

Water borne tonnage in 1932 and percentage it bore to your total tonnage.

What changes, if any, you have made in the routing of your traffic during the last five years that have affected the volume of your water traffic favorably or adversely. State reasons.

The extent to which speed, frequency, regularity and dependability of service are made necessary by the needs of your business or by the competitive conditions within your industry, illustrating by examples of typical differences in rail and water service for (A) receipts, (B) shipments.

Store-door pick-up and/or delivery, or other accessorial or special services performed by water lines but not by other transportation agencies, and whether the water lines might recapture some of their lost business by these devices.

Illustrate by some examples, the difference in time of delivery between water and rail to some of your principal shipping points.

Whether there should be extended or established joint rail-water rates; joint water-truck rates, or joint rail-water-truck rates. Should this be limited to cases where the water haul is for, say, 250 miles or more?

What water line differential under rail would evenly balance the competitive pull of these two agencies for the different classes of your tonnage? Give some examples of the difference between rail and water rates to or from your principal shipping points. What in your opinion is the proper basis for establishing differentials between rail and water and truck?

Extent and effect of excessive competition upon water line service and stability of domestic water transportation, and

Desirability of uniform and definite rates for water line service and publication of all water rates upon reasonable advance notice.

Desirability of stabilization of competitive conditions and practices and a closer approach to parity of competition by due consideration of the various economic factors surrounding each transport agency.

Desirability of co-ordination of all agencies engaging in domestic transportation.

Desirability of governmental regulation of domestic water lines, and matters and types of carriers it should embrace.

By what governmental body it should be administered.

Desirability of charging tolls for the use of inland waterways made navigable and/or maintained at public expense, and manner in which same should be assessed.

Whether railroads should be permitted to reenter the field of water transportation by repeal of the present laws prohibiting them from so doing.

Planning Board Appointed for St. Lawrence Waterway

At the request of President Roosevelt a planning board has been appointed to prepare for the inclusion of the St. Lawrence waterway project in the government's public works program. It includes three members of the Federal Power Commission, representatives of the War, Agriculture and Commerce departments, and the New York Power Authority, J. W. Carmalt, representing the Federal Co-ordinator of Transportation, W. V. Hardie, director of the Bureau of Traffic of the Interstate Commerce Commission, and E. P. Cotter, representing the Shipping Board.

Railway Wage Parleys Continuing in Canada

It is believed that the negotiations were renewed at instigation of Premier Bennett

Discussions between the managements of the Canadian railways and representatives of the unions engaged in the "running trades" continued in Montreal this week, and while no statement was issued it is believed that the negotiations renewed at the instigation of Premier Bennett, may be making some progress toward the goal of avoiding a strike.

Before a board of conciliation this week in Montreal the Canadian National submitted a brief in connection with the proposed additional 10 per cent wage reduction in their clerical employees, outlined the efforts made by the system to meet the unprecedented fall in railway traffic during the past four years, and emphasized that the proceedings were but one step in the railway's efforts to reduce operating expenses and thereby to mitigate the effects of diminishing income.

"Practically all the wage agreements in effect for railway employees," said the Canadian National brief, "include basic rates established in the years 1927 to 1929, which were years of general prosperity, in which the railways shared. In the year 1928 the Canadian lines of the Canadian National Railways had net railway operating income of $39,200,000 after payment of operating expenses and taxes.

"During these wage negotiations references have been made from time to time by the employees to the manner in which railway wage adjustments are being handled in the United States. The railways have held to the position that the wages of railway employees in Canada must be adjusted on the basis of conditions as existing in and to be faced in Canada.

"The railways thus, cannot give much, if any, weight to conditions, which by reason of differences in national policies or other causes, may effect the adjustment of railway employees" wages in the United States.

"In view of the good treatment accorded the employees of the Canadian National in the past it is felt that the employees should recognize that it will not be the policy of the railway to continue the deduction beyond the period of unusual traffic depression and that an appeal for relief would be favorably acted upon as soon as improved conditions warranted an upward adjustment."

Co-ordinator Proposes Scientific Research Plan

Science Advisory Board of N. R. C. has named committee to co-operate with regional committees

Co-ordinator Eastman has requested the three Regional Co-ordinating Committees of the railroads to appoint a committee of railroad officers to collaborate and co-operate with a committee which has been appointed by the Science Advisory Board of the National Research Council at his request, "to study the matter of scientific research for the railroads in conjunction with the railroad managements and the Co-ordinator's organization and, if it thereafter seems expedient, to formulate a plan for carrying on such research, to assist in the initiation of the project, and to advise in connection with its subsequent operation." This committee is made up as follows:

Dr. F. B. Jewett, vice-president, American Telephone & Telegraph Company; president, Bell Telephone Laboratories, Inc.; *Chairman.*

Mr. Maurice Holland, director, Division Engineering and Industrial Research, National Research Council; *Director.*

Dr. C. F. Kettering, vice-president and director, General Motors Corporation; president, General Motors Research Corporation.

Dr. John Johnston, director of research, U. S. Steel Corporation.

Dr. Francis C. Frary, director of research, Aluminum Company of America.

Dr. E. K. Bolton, chemical director, E. I. du Pont de Nemours & Co.

Dr. Harold G. Moulton, president, Brookings Institution.

Professor D. C. Jackson, head of the department of electrical engineering, Massachusetts Institute of Technology, and formerly head of the engineering firm of Jackson & Morley.

Mr. R. L. Lockwood, director, Section of Purchases, office of Federal Co-ordinator of Transportation.

Dr. Isaiah Bowman, chairman, National Research Council, ex-officio member.

Mr. Eastman said that the railroads have done and are doing much in the way of research and that it may be that they are doing all that can be done; but the need is very great, and the appointment of the committee by the Science Advisory Board furnishes an opportunity to put this question to the test under most excellent auspices.

On September 23 he wrote to Dr. Karl A. Compton, chairman of the Science Advisory Board of the National Research Council, saying in part:

> My understanding is that the Science Advisory Board, of which you are chairman, was created by Executive Order No. 6238, signed by President Roosevelt on July 31, 1933, "with authority, acting through the machinery and under the jurisdiction of the National Academy of Sciences and the National Research Council, to appoint committees to deal with specific problems in the various organizations." I also understand that the National Research Council was created at the request of President Wilson in 1916 and perpetuated by Executive Order No. 2859, signed by President Wilson on May 11, 1918.
>
> One of the purposes of the Emergency Railroad Transportation Act, 1933, under which I was appointed Federal Co-ordinator of Transportation, is to encourage and promote or require action on the part of the railroads which will avoid "wastes and preventable expense," and another is "to provide for the immediate study of other means of improving conditions surrounding transportation in all its forms and the preparation of plans therefor." In line with these aims, it seems to me that it would serve a most useful purpose if the Science Advisory Board could appoint a committee to study the matter of scientific research for the railroads in conjunction with the railroad managements and my own organization and, if it thereafter seems expedient, to formulate a plan for carrying on such research, to assist in the initiation of the project, and to advise in connection with its subsequent operation.
>
> Such research is, I am informed, being carried on with notable success by certain of the larger industries of the country, and my understanding is that the Science Advisory Board is in close contact and association with these activities. The railroad industry, as you know, is now facing most serious problems created by new conditions and is, I believe, entering upon a new era of adjustment and development. Science should be its handmaiden in this development. While I know that the railroads, both individually and collectively, have done and are doing, much in the way of research, the question is whether the possibilities in this direction have been exhausted, and I feel confident that the railroads will welcome the co-operation and assistance of the Science Advisory Board in answering this question. You are in a position to put at their service specialized experience and knowledge of research methods and possibilities.
>
> If such a committee as I suggest can be appointed by the Science Advisory Board, I shall ask the carriers' Regional Co-ordinating Committees, appointed under the provisions of the Emergency Railroad Transportation Act, 1933, to select a special committee of railroad executive officers to collaborate and co-operate with your committee in the proposed survey.

On October 7 Dr. Compton replied, saying that the suggestion falls exactly in line with the results of a preliminary survey by engineers and scientists in the Division of Engineering and Industrial Research of the National Research Council. "This survey led them seriously to question whether the railroads were taking adequate advantage of the opportunities and methods of modern applied science and to wonder what could be done to insure the realization of the maximum advantage to the railroads and to the public from a more adequate application of science in the railroad industry." The Science Advisory Board has therefore appointed the committee, which will be glad to co-operate with Mr. Eastman's organization and with the railroad managements along the most effective lines which they jointly can devise, and is "hopeful that the proposed co-operation may result in the development of a plan which will lead to better service to the public by the railroads and to increased business and an improved economic situation for the railroads themselves."

More Funds for Missouri River

An allotment of $3,600,000 to the War Department for channel stabilization on the lower Missouri river between Kansas City and the mouth of the river above St. Louis, has been announced by the Public Works Administration. The work will supplement existing improvements on the lower reach of the river with a view to securing a 6-foot channel. The plans contemplate the expenditure of $3,000,000 on channel contraction and bank protection between Kansas City and Hermann, Missouri. The remaining $600,000 will be spent for the same purposes between Hermann and the mouth of the river. This authorization supplements an allotment of $14,153,108 previously made by the P. W. A. for improving the Missouri river between Kansas City and Sioux City, Iowa.

Western Roads Announce Cuts in Excursion Fares

Reductions, including new low holiday fares, will be placed into effect on December 1

Reduced excursion and holiday fares will become effective on December 1 on western railways as a result of several conferences held by the passenger traffic officers following the meeting of the Western Association of Railway Executives on October 6, when the basic rate was reduced to three cents, as reported in the *Railway Age* of October 14, page 529. These new rates, which will apply on all railroads west of Chicago, St. Louis, Mo., Memphis, Tenn., and New Orleans, La., provide for:

(1) All-year excursion fares with nine months' limit to and from the Pacific coast at radical reductions and good in all equipment. The rate to California, for example, will be $111, as compared with the present round-trip rate of $144;

(2) Round-trip fares with a 10-day limit between all points in the West on the basis of 2 cents per mile in each direction and slightly higher fares for longer limits. This action modifies that taken by the executives, which provided for 3 cents per mile for one-way tickets, 2½ cents per mile for round-trip tickets with a time limit in excess of 10 days, and a rate of 2 cents a mile to be established by individual railroads at their discretion for round-trip tickets with a 10-day limit, by making the latter rate uniform on all western railroads;

(3) Two-cent fare tickets in each direction for the Thanksgiving holiday period to be sold from November 28-30, with a limit of 10 days;

(4) A rate of 2 cents per mile in each direction for the Christmas and New Year holiday period, the tickets to be on sale from December 14 to January 1, with a return limit to January 15. This is the lowest holiday rate ever made by the western lines;

(5) A reduction of 20 per cent in all winter excursion rates to the Southwest territory, such as Texas and Mexico points;

(6) A 2-cent coach rate. The executives agreed that any railroad or group of railroads could also institute a rate of 2 cents a mile for one-way travel in day coaches only. The adoption of this rate was not made compulsory, but was left to the discretion of the member lines. At subsequent meetings of traffic representatives it developed that such practice would result in confusion throughout the territory, and therefore it was agreed that all railroads would adopt the 2-cent-a-mile coach rate;

(7) Low class rates between Chicago and California and the Pacific Northwest. Under the new arrangement, the first-class California rate will be $66.55 instead of $79.84, the second-class rate $44.40 instead of $50, and the coach rate $34.50, or at the rate of 1½ cents a mile, instead of $40. The North Coast rates will be $64.35, $42.90 and $34.50, respectively.

Gen. Ashburn Advocates Transport Co-ordination

Inland Waterways Corporation head speaks before Rivers and Harbors Congress

The co-ordination of rail, water, highway and other forms of transportation into a national co-operative system, which would be governed by a reconstituted Interstate Commerce Commission, was advocated by Major General T. Q. Ashburn, president of the Inland Waterways Corporation, before a special session of the National Rivers and Harbors Congress at Chicago on October 12-13. General Ashburn, however, devoted the first part of his paper to a discussion of the economics of inland waterway transportation, a controversy regarding which, he said, has been raging ever since the Inland Waterways Corporation "passed from a money-losing proposition to a self-supporting and profitable basis". While stating that the corporation's revenue from "water-borne freight is negligible as compared with the total rail revenue (134/1000 of 1 per cent)," General Ashburn, nevertheless, averred that "the public interest in the proper development of this valley section (the Mississippi Valley) is deeper than its investment in any form of transportation or its need of a particular form of service."

General Ashburn then turned to the subject of co-ordinating the various systems of transportation, in which he would reorganize the Interstate Commerce Commission by dividing it into groups "such as (1) the rail group, (2) the water group, (3) the motor group, and (4) airways and pipe line group, for convenience called the 'miscellaneous group' with each group handling matters pertaining only to the carriers under its jurisdiction. In addition, in settling controversies between carriers in the different groups, such as between rail and water carriers, "the question would be handled to a definite conclusion by a group consisting of one rail member, one water member and one member of the 'miscellaneous group', sitting as an arbiter between the deeply interested groups".

Citing the highly co-ordinated railway systems of the country, General Ashburn said that the logical method of procedure is to "bring about a co-ordinated system of water transportation and a co-ordinated system of motor transportation so that each may not only settle their own internecine strife, but be able to deal with their competitors on somewhat of an equality".

Labor Conditions in Air and Motor Transportation Being Studied

In connection with the announcement of a comprehensive study of wages, hours, and working conditions in the motor-trucking industry, issued jointly on October 12 by Joseph B. Eastman, federal co-ordinator of transportation, and Isador Lubin, commissioner of labor statistics, it was disclosed also that an investigation of hours and wages of employees of the mail and passenger air lines made two years ago by the Bureau of Labor Statistics is being repeated in order to ascertain 1933 conditions. The work is being done by field agents of Co-ordinator Eastman and the Bureau of Labor Statistics and is nearly complete.

Agents from the Bureau of Labor Statistics are making personal investigation of the wage rates, hours of service, and conditions of work of the employees of 200 bus companies and 300 trucking companies throughout the United States, engaged in intercity business, and a questionnaire covering the same subjects was sent by the bureau to 3,000 selected trucking firms, most of them individuals and companies operating ten trucks or less. It is also being sent to several thousand other operators, including operators of private or industrial truck fleets. The investigation has the support of the American Trucking Associations, Inc., the national organization recently formed by the merger of more than 100 state and regional associations of motor truck operators.

Commissioner Lubin's letter accompanying the questionnaire says that if the recipients desire to submit for the use of the co-ordinator any general statements or suggestions about labor conditions the bureau will undertake to bring them to the immediate attention of his office.

New Chief of Army Engineers

The War Department has appointed Col. Edward M. Markham as chief of Army engineers, with the rank of major general, succeeding Major General Lytle Brown, whose tour of duty expired on September 30. In this position he will have charge of river and harbor improvement work.

Club Meeting

The Northwestern Car Men's Association (St. Paul) will hold its next meeting at the Y. M. C. A gymnasium, Minnesota Transfer, on Monday evening, November 6. S. W. Swanson, general supervisor, car department, C. M. St. P. & P., will present a paper on Terminal Inspection and Repairs; Delays to Trains.

September Locomotive Shipments

September shipments of railroad locomotives from the country's principal manufacturing plants as reported to the U. S. Bureau of the Census totaled two locomotives as compared with three in August and 13 in September 1932. Unfilled orders at the close of September totaled 83 locomotives—78 electrics and 5 steam. The foregoing figures do not include data on locomotives produced by railroad companies in their own shops.

Chicago Switching Rates Under Advisement

Arguments before a three-judge federal court in the Chicago switching rate case have been concluded and the case taken under advisement. The Illinois Commerce Commission, the Chicago Board of Trade and others are asking for a preliminary injunction against enforcement of the Interstate Commerce Commission's order increasing intrastate switching rates in the Chicago district to the interstate switching rate level.

Cornwell, B. & O. Counsel, Criticizes the Prince Plan

Calls it "destructive in its every phase" except as to interests of seven large roads

Listing the so-called Prince Plan of railroad consolidation and the proposed St. Lawrence Seaway as two of the "omnious threats" which he had in mind, John J. Cornwell, general counsel of the Baltimore & Ohio, in his October 11 address at the Baltimore (Md.) Live Stock Show banquet, expressed surprise that "Baltimore and Baltimoreans are not more interested, or at least more vocal, in connection with or as to some proposals, the consummation of which would be harmful, if not indeed disastrous, to this city and its entire trade area." Mr. Cornwell's attack on the St. Lawrence Seaway was confined to a brief declaration in opposition, the bulk of his address being devoted to his criticism of the Prince Plan which he characterized as "destructive in its very phase except as to the interests of the seven big railroads in the country to which it would hand, without mercy, all the others."

The speaker in launching his criticism of the merger proposal recalled the consolidation provisions of the Transportation Act of 1920 and subsequent developments such as the Interstate Commerce Commission's tentative plan of 1923, its final plan providing five systems in Eastern Trunk Line territory and the latter's modification following the four-system plan agreements.

"Despite the long and arduous study of the problem of railroad consolidation by the Interstate Commerce Commission," Mr. Cornwell continued, "despite the agreement of the executives of the four principal systems in the east and the approval of their agreement by the commission and the progress made in working out the plan, an amazing proposal is thrust into the foreground—the so-called Prince Plan—for only two systems in the east—the New York Central and the Pennsylvania. Perhaps that might not be so bad for the general public were they to be consolidations in the ordinary sense of the term, but the proposal is virtually to scrap the smaller systems, including the Baltimore & Ohio, and, of course, inevitably that means to scrap the towns and communities depending upon those roads for their railroad transportation."

To counter any suggestion that the foregoing was an "exaggerated statement" Mr. Cornwell quoted sections from the Prince Plan's "Summary of Survey Covering System No. 2." The Prince-planners, he found to have been specific "as to their intention to dismantle and destroy Baltimore & Ohio facilities particularly for the purpose of ridding it of taxation, of which the states, counties and cities depending so largely upon it for tax revenues should take note." Summing up, the speaker found that proponents of the Prince Plan "would tear up the Baltimore & Ohio between Philadelphia and Baltimore and reduce the entire remaining part of the system to a No. 2 branch line status. They would not only make it a

single track railroad between Baltimore and Washington on the east and Chicago and St. Louis on the west but, in another paragraph, brazenly assert its condition now is so good that one remaining track could get along for some time without spending any money on it for maintenance."

Reminding his audience that a little while ago Baltimore business and professional interests were "greatly excited and exceedingly active" because, under the Four-Party Plan, the Western Maryland would pass to the B. & O. Mr. Cornwell expressed surprise that these same interests which were then not satisfied to see Baltimore left with only two rail systems, should now remain silent when it is proposed to leave the city with but one system.

"Make no mistake," Mr. Cornwell said in conclusion, "There are powerful financial and political influences behind this so-called Prince Plan.

"Mr. Eastman (Federal Co-ordinator Joseph B. Eastman), in an official statement, said properly it should be called the 'Barriger Plan.' Mr. Barriger (J. W. Barriger), devised it and Mr. Prince (Frederick H. Prince), a Boston banker, of whom the Interstate Commerce Commission spoke in rather harsh terms a good many years ago, financed the work on it.

"But who is Mr. Barriger? Formerly connected with the Pennsylvania Railroad, he is Chief Examiner of the Reconstruction Finance Corporation, the government agency which has lent government money to the railroads during this crisis. So an officer of the government creditor of the roads is sponsoring this plan. For that reason, if for no other, it cannot be dismissed lightly.

"Those proposing the plan claim that, in the entire United States, it would reduce railroad operating costs more than seven hundred millions of dollars annually. It is these figures Co-ordinator Eastman is having checked. Even should it be found they are approximately correct, at what cost would these savings be made?

"First, three hundred thousand railroad workers would be dismissed from service. The promoters of the plan hold out the bait to railroad labor that the savings would be so large all railroad employees over 50 years of age could be pensioned. A rosy promise which might or might not be kept.

"But what would happen to property values and taxable bases in all those cities and towns where terminals, shops and other railroad facilities would be scrapped and abandoned?

"What would become of industries now on main line railroads which suddenly found themselves left on branch lines where there were no through freight or passenger service?

"Of course these industries would be forced to move to get back on the main line, and then what would happen to their employees and the towns in which they live?

"Ruin would await them.

"This so-called Prince Plan, for which Co-ordinator Eastman says Examiner Barriger of the Reconstruction Finance Corporation is responsible, is not a constructive proposal. It is destructive in its every phase except as to the interests of the seven big railroads in the country to which he would hand, without mercy, all the others.

"In our eagerness and anxiety to support the President and his program of recovery, and we cannot be too eager or too diligent in doing that, we must, nevertheless, keep our eyes on those who would use this emergency to put across selfish schemes as well as on those accidentally elevated to high places who would try out on a confiding and distressed people pipe dreams with which their muddled minds are troubled."

Federal Trade Commission Investigates Corporate Salaries

Pursuant to a resolution adopted by the Senate during the last Congress the Federal Trade Commission has instituted an inquiry to ascertain the salary schedules of executive officers and directors of corporations (other than public utility corporations) engaged in interstate commerce having capital or assets of more than $1,000,000 by addressing questionnaires to some 2,000 corporations listed on the New York Stock Exchange and the Curb Exchange.

Eastern Traffic Executives Consider Store-Door Delivery

Traffic executives of Eastern railroads were scheduled to meet in New York on October 19 to decide whether or not their respective roads would join the Pennsylvania in the establishment of store-door collection and delivery service for l.c.l. freight. Despite reports to the contrary, the P. R. R. has not abandoned its proposal but is completing the preparation of necessary tariffs which are expected to be filed October 28 with an effective date of December 1.

Passenger Rate Reductions Deferred in East

The Eastern Presidents' Conference, at its meeting in New York on October 13, again deferred action on proposed reductions in basic passenger rates. This decision was reached after the Conference had received the report of its passenger fare committee of which F. E. Williamson, president of the New York Central, is chairman. Following the meeting Mr. Williamson said that it was decided to delay action "pending further study of what the effect on revenues would be of the proposed reductions." He added that, "It had not become clear just what the proper action of the Eastern carriers should be."

Supreme Court Finds Probable Jurisdiction in Several Rail Cases

The Supreme Court of the United States on October 9 announced that it had found that probable jurisdiction had been shown in several railroad cases that had been appealed to it. These include the appeal by the Interstate Commerce Commission from the decision of a lower court enjoining its order requiring the railroads to join with the American Barge Line Company in joint rates and through routes; the appeal of the Missouri Pacific from a lower court decision upholding the Arkansas full-crew law, and the appeal of the state of Montana from a lower court decision upholding the Interstate Commerce Commission's order as to intrastate rates. Writs of certiorari were denied in many cases.

Fitness and Happiness

The safety circular of the American Railway Association for November (No. S-379) is an appeal to every employee to "stay fit." The happiness of the home is shattered when accident kills the father or destroys his earning power; and the poster, which goes with the circular, shows a shop man going home from his work in anticipation of "happy days", this fortunate state of mind being due to the fact that he has taken care to keep fit. Happy days are now dawning, says the circular, for many who have been out of work, provided they stay fit. "Follow good habits when on duty and when off duty. Keep your body fit for your job, your mind on your job, and Fitness for your job will bring Happiness to your door."

Transport Conference Meets

The conference on railroad legislation called under the chairmanship of Harry A. Wheeler, president of the Railway Business Association, met in New York on October 17 and 18. It received a report from its committee on research and analysis on rates charged for transport by railway, highway and waterway. The committee was directed to investigate the ratio of facilities provided by each agency to the amount of traffic offered.

The conference meets in Chicago on November 10, when it will consider methods of regulation and their relative efficacy. Following the Chicago meeting another one will be held in New York, probably in December.

Annual Meeting, R. B. A.

Over 1,200 reservations have already been received for the twenty-fifth annual meeting and dinner of the Railway Business Association which will be held at the Stevens Hotel, Chicago, on November 9. At the dinner the speakers will be Joseph B. Eastman, federal co-ordinator of transportation, and Carl R. Gray, president of the Union Pacific. The program of the business meeting is as follows:

Governing Board

11 a.m.—North ballroom

Annual Meeting

1 p.m.—North ballroom, luncheon provided by the association

Business

- Report of treasurer
- Report of Governing Board
- Resolutions recommended by Governing Board
- Report of committees on Finance and Nominations
- Election of officers

Annual Dinner

7 p.m.—Main ballroom

Norfolk & Western Efficiency Meeting

Addresses by officers of the railroad, a luncheon at which the delegates were entertained by Douglas Malloch, speaker and popular poet, and the discussion of "ways and means of improving the railroad's service to the public," were features of the

fourteenth annual System Efficiency Meeting of Norfolk & Western employees which was held at Roanoke, Va., on October 14.

Approximately 200 delegates from five states served by the railroad, were expected to attend.

The schedule of the sessions at which J. B. Baskerville, general claim agent of the N. & W., presided included talks by J. E. Crawford, general manager; R. H. Smith, general superintendent of the Eastern General division; Joe Marshall, special representative of the American Railway Association; W. J. Jenks, N. & W. vice-president in charge of operation; and R. G. Henley, superintendent of motive power.

Proposed Elimination of New York Crossings

The Public Service Commission of New York State will hold a hearing at Albany, on October 25, on suggestions which have been received from cities, towns and state departments for the elimination of 40 or more railroad crossings of highways at grade. These crossings are embraced in 15 projects, and the estimated cost of the work of changing the whole 15, is $5,539,000. The railroads involved, and the towns in which the crossings are situated, are as below:

New York, New Haven & Hartford—Poughkeepsie.

New York Central—Le Roy, Stafford, Batavia, Alexander, Gates, Riga, (Village of) Hilton, De Kalb, Attica.

Delaware, Lackawanna & Western—Pavilion.

Erie—Alexander, Nunda, Wallkill, Owego.

Lehigh Valley—Rush.

Long Island—Hempstead, Garden City, New Hyde Park, Brookhaven.

Delaware & Hudson—Corinth.

Truckers Contend Railroads Favored by Steel Industry

The American Trucking Associations, Inc., has filed a brief with Deputy Administrator K. M. Simpson of the National Recovery Administration against provisions in the code for the iron and steel industry which, together with rulings made thereunder by the code authority for that industry, it asserts has the effect of increasing the price of steel to a consignee who elects to use motor truck instead of rail transportation. This refers to a provision in the code that in any case in which iron or steel shall be delivered by "other than all-rail transportation," the member of the code selling such product "may allow to the purchaser a reduction in the delivered price, otherwise chargeable under this Section 4, at a rate which shall have been previously approved by the board of directors and filed with the secretary," the price otherwise chargeable being the base price plus the rail transportation rate. According to the brief, Commercial Resolution No. 8 of the code authority for the American Iron and Steel Institute authorizes "certain reductions in the delivered price in certain cases where products are delivered by other than all-rail transportation," and that where delivery is taken by truck transportation the seller may allow a reduction in the delivered price equal to 65 per cent of the carload all-rail published tariff rate charges. The brief takes the position that this amounts to one industry arbitrarily fixing a price to be quoted for transportation service by another industry and that the regulations "smack of a resolution to use only railroads for the delivery of steel."

Air-Express Traffic Increases Over Last Year

Air-express traffic over the Railway Express Agency's air system for the nine months ending September 30 increased 195 per cent over that for the corresponding period of 1932, while the traffic for the month of September increased 108.248 per cent over that for the same month of last year, according to a recent announcement by J. H. Butler, general manager, Department of Public Relations.

The total mileage of the R. E. A. air system has been increased to 13,235 miles by the addition of the 367-mile Hanford Line between Omaha, Neb., and Minneapolis, Minn., and St. Paul, air-express operation over which formally commenced October 15.

The new addition provides shippers of St. Paul and Minneapolis and intermediate areas a third air-express routing to Salt Lake City, Utah—the first via the Northwest Airways to Chicago and United Air Lines; the second via the Northwest Airways to Billings, Mont., and National Parks Airways; the third by the Hanford and United Air Lines.

St. Lawrence Treaty a Threat to Taxable Values

The St. Lawrence Shipway Treaty is the culmination of a demand for regional development which has been created in some twenty-two states during the past twenty years. The present treaty was hastily negotiated and submitted to influence votes prior to the last Presidential election. It failed to produce the votes and, on examination, is found to be too favorable to Canada and indefensible in respect to the surrender to international control of Lake Michigan water.

The power development project should be separated from the navigation project and considered on its merit. There is no present demand at the point of production or elsewhere for the amount of power proposed to be developed. Methods of producing electrical energy have changed greatly in the last decade. It has been demonstrated that local steam plants utilizing modern processes can produce and deliver electric power more efficiently and economically than hydro-electric plants which must market power at points removed from the place of production.

In the Washington hearings it was proven that the present lake carriers (including cost of transfer) operate more cheaply than ocean ships can on inland water. If the claims of the St. Lawrence advocates regarding navigation benefits are correct, then the construction of the shipway constitutes a serious peril to existing investments in American railroads and American terminals and an attempt to transfer advantages to foreign soil.

From an address by Samuel B. Botsford, executive vice-president, Buffalo (N. Y.) Chamber of Commerce.

Report of Railroad Credit Corporation

Railroads contributed $75,425,428 to the fund used by The Railroad Credit Corporation in making loans to prevent default in carriers' fixed interest obligations, of which $5,205,449 has been repaid to the participating carriers, according to the report submitted at the second annual meeting held in Washington on October 17 of the stockholders of that Corporation. This fund represented the carriers' revenues from the increased freight rates allowed by the Interstate Commerce Commission in Ex Parte 103 during the 15 months ended on March 31, 1933, pooled by the carriers and administered by the corporation under the provisions of the marshalling and distributing plan. The fund fell short of the estimated receipts and, therefore, the Credit Corporation could not meet all demands for aid during its lending period, which expired May 31, 1933. Applications were received from 64 carriers for loans aggregating $149,241,868 of which $73,691,368 were approved while the remainder of $75,550,500 were, for various reasons (principally the granting of similar applications by the Reconstruction Finance Corporation), removed from the docket or denied. The directors were re-elected.

Pennsylvania Loses Case Against Coal Line

The application of the Pennsylvania for an injunction to restrain the Pittsburgh Coal Company from completing the construction of a 13-mile railway line between Smiths Ferry, Pa., and Negley, Ohio, was denied in the Federal Court at Cleveland, Ohio, on October 2. The Pennsylvania will probably not appeal from the decision pending the outcome of a Pittsburgh & Lake Erie case against the same project.

The petition of the Pennsylvania to halt the construction was based upon a contention that the line was being built in violation of the Interstate Commerce Act. The Pittsburgh Coal Company contended that it was building the road to provide an outlet for eight miles along the Ohio river where production had declined in recent years.

"I have studied the voluminous briefs submitted in this case and have decided that an injunction should not be issued," Federal Judge Samuel H. West said in his decision. "The proof submitted by the defendant that the track was a purely private enterprise and not a common carrier greatly outweighed that of the plaintiff to the contrary.

"It is true that some deception or at least sharp practices were resorted to by the defendant to secure portions of the right-of-way. But the enterprise must be looked at as a private venture. While the plaintiffs strongly suspected otherwise, they were unable to bring proof to the contrary."

Code Proposed for Waterway Carriers

For the purpose of discussing at close range the problems confronting the owners and operators of vessels plying the inland waterways, and to expedite the formulation of a code, in accordance with the provisions of the national industrial recovery act, Deputy Administrator William H. Davis of the N. R. A., is holding a series of conferences at various points throughout the country, accompanied by his assistant, Kenyon B. FitzGerald. The first of these conferences was held in St. Louis, Mo., on October 16, with the owners of vessels operating on the Mississippi river and its tributaries, and with the shippers located in the Mississippi Valley. It is expected that additional meetings will be held in New York, New Orleans and San Francisco.

It is hoped that through these conferences a true expression of the sentiment of the industry will be obtained and that as a result of this information it will be possible to draw up a code sufficiently flexible to encompass the many, and oft times conflicting, problems of the inland fleets which include river barges and scows, canal boats, lighters, tugs, ferries, excursion steamers, and unclassified working craft. In connection with this work, Deputy Davis has asked for and received the co-operation of the Coastwise and Inland Waters Petroleum Carriers Association, the New York Boat Owners Association, the Canal Carriers Association, the Boat Owners Association of the Pacific Northwest, the Towboat Exchange, and the Mississippi Valley Association.

Operating Revenues and Operating Expenses of Class I Steam Railways in the United States

Compiled from 149 Monthly Reports of Revenues and Expenses Representing 150 Class I Steam Railways

FOR THE MONTH OF AUGUST, 1933 AND 1932

Item	United States		Eastern District		Southern District		Western District	
	1933	1932	1933	1932	1933	1932	1933	1932
Average number of miles operated	240,622.06	241,869.40	59,391.48	59,718.15	45,725.08	46,115.26	135,505.50	136,035.99
Revenues:								
Freight	$241,242,359	$194,916,212	$106,157,246	$79,351,015	$46,492,732	$36,103,638	$88,592,381	$79,461,559
Passenger	32,241,972	31,385,453	19,397,049	18,799,079	3,435,508	3,119,039	9,409,415	9,467,335
Mail	7,396,130	7,633,494	2,921,934	3,032,900	1,240,822	1,257,718	3,233,374	3,342,876
Express	3,087,372	3,616,666	1,423,242	1,760,069	393,261	362,713	1,270,869	1,493,884
All other transportation	6,690,035	6,343,408	3,677,208	3,615,708	563,008	458,196	2,449,819	2,269,504
Incidental	5,826,980	5,008,169	3,083,807	2,815,255	732,612	615,154	2,010,561	1,577,760
Joint facility—Cr.	720,836	710,456	230,160	243,719	188,316	133,707	302,360	333,030
Joint facility—Dr.	187,908	225,095	46,456	61,293	21,184	18,613	120,268	145,189
Railway operating revenues	297,017,776	249,388,763	136,844,190	109,556,452	53,025,075	42,031,552	107,148,511	97,800,759
Expenses:								
Maintenance of way and structures	32,768,757	28,990,487	13,726,049	11,064,205	6,200,731	5,231,759	12,841,977	12,694,523
Maintenance of equipment	55,530,817	47,162,915	25,848,607	20,364,774	10,322,339	8,571,280	19,359,871	18,226,861
Traffic	7,181,633	7,575,336	2,697,532	2,825,580	1,292,163	1,441,691	3,191,938	3,308,065
Transportation	93,121,123	89,710,648	44,131,548	41,394,793	15,257,647	14,378,234	33,731,928	33,937,621
Miscellaneous operations	2,141,021	2,194,756	1,065,227	1,041,185	224,457	216,811	851,337	936,760
General	11,905,661	12,332,470	5,158,204	5,287,776	2,083,992	2,097,219	4,663,465	4,947,475
Transportation for investment—Cr.	196,507	319,980	47,369	107,129	17,526	35,581	131,612	177,270
Railway operating expenses	202,452,505	187,646,632	92,579,798	81,871,184	35,363,803	31,901,413	74,508,904	73,874,035
Net revenue from railway operations	94,565,271	61,742,131	44,264,392	27,685,268	17,661,272	10,130,139	32,639,607	23,926,724
Railway tax accruals	23,125,650	23,686,584	10,280,529	10,448,445	4,142,716	4,021,058	8,702,405	9,217,081
Uncollectible railway revenues	113,409	76,275	55,545	40,214	10,501	9,285	47,363	26,776
Railway operating income	71,326,212	37,979,272	33,928,318	17,196,609	13,508,055	6,099,796	23,889,839	14,682,867
Equipment rents—Dr. balance	7,149,961	6,735,670	4,410,467	3,578,224	*171,427	22,149	2,910,921	3,135,297
Joint facility rent—Dr. balance	3,198,035	3,258,465	1,763,233	1,868,665	394,116	340,666	1,040,686	1,049,134
Net railway operating income	60,978,216	27,985,137	27,754,618	11,749,720	13,285,366	5,736,981	19,938,232	10,498,436
Ratio of expenses to revenues (per cent)	68.16	75.24	67.65	74.73	66.69	75.90	69.54	75.54

FOR EIGHT MONTHS ENDED WITH AUGUST, 1933 AND 1932

Average number of miles operated	241,062.43	241,743.53	59,513.32	59,718.07	45,815.69	46,151.47	135,733.42	135,873.99
Revenues:								
Freight	$1,616,118,906	$1,601,298,473	$693,804,034	$693,610,953	$333,019,971	$306,822,218	$589,294,901	$600,865,302
Passenger	213,208,779	265,373,342	127,325,157	157,352,874	25,273,116	30,682,996	60,610,506	77,337,472
Mail	59,908,136	64,436,162	23,497,877	25,437,138	10,287,213	10,919,679	26,123,046	28,079,345
Express	28,567,377	36,146,323	11,948,197	16,333,419	5,789,293	6,283,854	10,829,887	13,529,050
All other transportation	47,640,103	53,308,929	26,656,897	30,768,275	4,192,806	4,262,135	16,790,400	18,278,519
Incidental	36,614,829	43,285,911	20,494,219	25,222,408	5,297,546	5,724,141	10,823,064	12,339,362
Joint facility—Cr.	5,380,824	6,149,709	1,727,365	2,068,648	1,238,252	1,156,197	2,415,207	2,924,864
Joint facility—Dr.	1,486,761	1,908,165	403,521	542,956	148,890	150,477	934,350	1,214,732
Railway operating revenues	2,005,952,193	2,068,090,684	905,050,225	950,250,759	384,949,307	365,700,743	715,952,661	752,139,182
Expenses:								
Maintenance of way and structures	210,666,234	246,950,007	83,366,096	99,567,941	42,706,730	47,884,059	84,593,408	99,498,007
Maintenance of equipment	385,964,556	421,065,411	172,514,073	190,326,010	73,295,006	76,870,155	140,155,477	153,869,246
Traffic	57,032,355	66,763,177	21,133,936	25,690,894	10,887,103	12,399,240	25,011,316	28,673,043
Transportation	703,663,039	786,492,583	327,014,834	369,499,500	119,215,252	128,116,820	257,432,953	288,876,263
Miscellaneous operations	15,078,367	19,412,586	7,571,690	9,641,390	1,768,151	2,264,713	5,738,526	7,506,483
General	95,712,741	106,553,555	41,156,246	46,490,588	16,354,922	18,281,673	38,201,573	41,781,294
Transportation for investment—Cr.	1,814,979	2,892,031	668,844	1,020,531	203,205	217,618	942,930	1,653,882
Railway operating expenses	1,466,302,313	1,644,345,288	652,088,031	740,195,792	264,023,959	285,599,042	550,190,323	618,550,454
Net revenue from railway operations	539,649,880	423,745,396	252,962,194	210,054,967	120,925,348	80,101,701	165,762,338	133,588,728
Railway tax accruals	180,778,333	193,696,031	76,162,640	80,122,015	34,009,065	35,998,197	70,606,628	77,575,819
Uncollectible railway revenues	678,283	620,930	286,474	250,184	82,158	90,632	309,651	280,114
Railway operating income	358,193,264	229,428,435	176,513,080	129,682,768	86,834,125	44,012,872	94,846,059	55,732,795
Equipment rents—Dr. balance	56,359,576	57,040,494	29,042,195	28,576,891	3,852,897	3,305,547	23,464,484	25,158,056
Joint facility rent—Dr. balance	24,167,567	23,502,541	12,987,563	12,662,238	2,718,423	2,434,380	8,461,581	8,405,923
Net railway operating income	277,666,121	148,885,400	134,483,322	88,443,639	80,262,805	38,272,945	62,919,994	22,168,816
Ratio of expenses to revenues (per cent)	73.10	79.51	72.05	77.89	68.59	78.10	76.85	82.24

* Deficit or other reverse items.

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Continued on next left-hand page

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Sherrington Addresses New York Traffic Club

C. E. R. Sherrington, secretary, Railway Research Service, London, Eng., was the speaker at the forum meeting of the Traffic Club of New York on October 18. In the address Mr. Sherrington covered substantially the same ground as was covered by him in his address of October 9 before the Traffic Club of Chicago, an abstract of which will be published in a forthcoming issue of *Railway Age*.

Following his formal remarks, Mr. Sherrington answered several questions from the floor. Among these was one from W. H. Chandler, eastern traffic assistant on the staff of the federal coordinator of transportation, who asked whether pending proposals for the regulation of highway transportation in Great Britain contemplated regulatory control over the rates of highway freight carriers. Mr. Sherrington answered that no control over rates was proposed because the railways there feel that, if they obtain the freedom which the pending legislation would give, they would be in a position to equalize the competition.

Another questioner sought Mr. Sherrington's opinion on the benefits of consolidation and was told that the first three or four years after consolidation is effected are apt to become a period of chaos. If railways survive this initial period, the speaker added, they are apt to be in a better position than they were before the merger. Railroads of Great Britain, which were consolidated under the Railways Act, 1921, he continued, have only within the past two or three years become completely adjusted and reached a stage where British shippers are finding in the railway world "a new spirit" which reflects a disposition to give all types of service which business desires.

In commenting on the passenger business in this country, Mr. Sherrington expressed his thought that it is wrong to assume that passenger traffic is lost forever. He feels, however, that American railroads, in order to recoup this business, must adopt lighter and more economical passenger equipment and give passengers "a little individual attention."

J. W. Roberts, perishable traffic manager of the Pennsylvania and vice-president of the Club, presided at the meeting.

Equipment and Supplies

IRON AND STEEL

THE LONG ISLAND has ordered 130 tons of steel from the American Bridge Company for work at Kew Gardens, Long Island, N. Y.

SIGNALING

THE ELGIN, JOLIET & EASTERN has ordered from the General Railway Signal Company an electric interlocking, with 12 working levers and 4 spare spaces, to be installed at Bridge 198, Joliet, Ill. Type SA high and dwarf signals will be used.

THE LEHIGH VALLEY has ordered from the General Railway Signal Company an addition of 8 levers to a federal type electric interlocking at Newark, N. J. High and dwarf position-light signals will be used.

THE TEXAS PACIFIC-MISSOURI PACIFIC TERMINAL, New Orleans, La., has ordered from the General Railway Signal Company an electric interlocking, 17 working levers and 3 spare spaces, for installation at Harvey Canal, Harvey, La.

MISCELLANEOUS

THE PENNSYLVANIA, effective October 16, reduced from four to two a month the number of furlough days without pay which its employees have been taking for some time past. In July of this year the furlough days were reduced to four a month from a total of six, which had been in effect since March 1.

THE MOTOR RAIL COMPANY, which operates truck-body service over the Pennsylvania and Richmond, Fredericksburg & Potomac between New York, Philadelphia, Pa., Baltimore, Md., and Richmond, Va., has ordered 20 demountable truck bodies from the St. Louis Car Company. Delivery of these bodies is expected to be completed by November 15 when they will be placed in service on the New York—Baltimore—Richmond route.

* * * *

Remodeled Baggage Cars for Fast Freight Service

Two of the three remodeled baggage cars which the Central Vermont has recently placed in l.c.l. freight service on its Southern division to handle traffic to and from New York. The cars, remodeled in the C. V.'s St. Albans (Vt.) shops, are decorated with gold leaf signs on a crimson background and have excited considerable favorable public and press comment.

Supply Trade

W. K. Leach, formerly with the General Alloys Company, Boston, Mass., has been appointed general manager of the Alloy division of the **American Manganese Steel Company,** with headquarters at St. Louis, Mo.

The Westinghouse Electric & Manufacturing Company, Westinghouse Electric International Company, Westinghouse Electric Elevator Company and **Westinghouse Lamp Company** have moved their New York executive and sales offices to the RCA building, 30 Rockefeller Plaza, New York City.

The American Rolling Mill Company, Middletown, Ohio, has established a stainless steel sales department for the distribution of stainless steel sheets, strips and plates, which the company is now manufacturing, following experimental work on stainless steel alloys which has been in progress in the company's plants. **J. P. Butterfield,** manager of the Armco development department, has been placed in charge of the new department.

Charles J. Graham, formerly president of the Bolt, Nut & Rivet Manufacturers' Association, has joined the staff of the **Pressed Steel Car Company** as special representative, with headquarters in the Grant Building, Pittsburgh, Pa. Mr. Graham, at the time of his affiliation with the Bolt, Nut & Rivet Manufacturers' Association, which ceased to exist in May, 1931, was also vice-president of the Pittsburgh Screw & Bolt Corporation. His former company, the Graham Bolt & Nut Company, of which he was vice-president, was merged with the Pittsburgh Screw & Bolt Corporation in 1929. Mr. Graham's experience has been largely in connection with railroad sales, and his activities with the Pressed Steel Car Company will be along these lines.

The LeCarbone Company, with headquarters in Hoboken, N. J., has consolidated its two divisions, the **Carbon Products Division** and the **Battery Division. H. R. Partridge,** formerly manager of the Carbon Products Division, becomes general manager of the new organization with headquarters at Hoboken. **B. R. Padmore** becomes chief engineer with headquarters at the plant in Hoboken. The former chief district engineers of the Carbon Products Division have had their activities extended to include batteries. These include, **E. C. Brehm,** Chicago, **W. R. Catching,** San Francisco, **A. M. Ramsey,** Pittsburgh. **P. G. Pendorf** and **W. R. Nelson,** sales and service engineers, will continue to devote their activities to the battery field, with headquarters at Hoboken and Chicago, respectively.

W. H. Elliott, who has been appointed publicity representative of the **Union Switch & Signal Company** and the **General Railway Signal Company,** with headquarters at 347 Madison avenue, New York City, took up these duties on October 16. He succeeded the late Henry M. Sperry. Mr. Elliott was born on August

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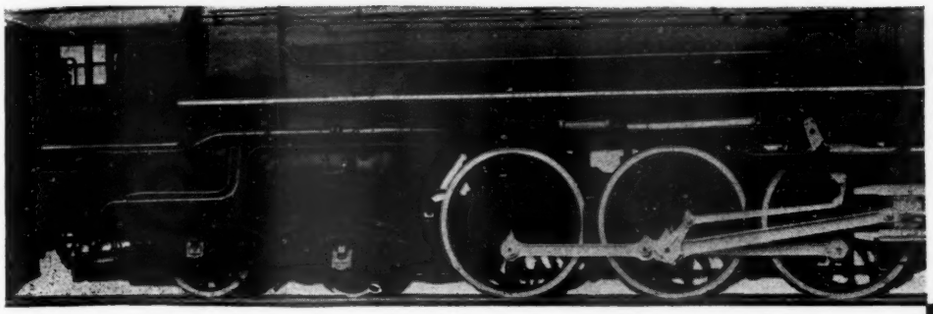

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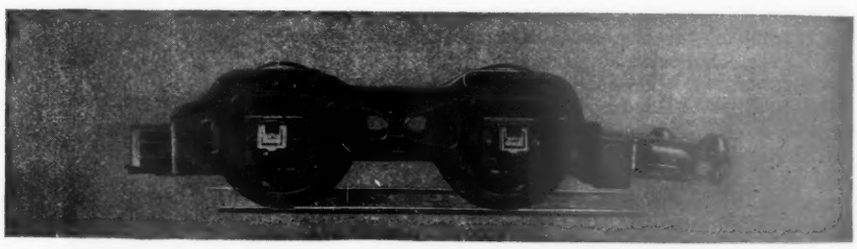
—Operating Vice-President of Large Railroad

The Locomotive BOOSTER SAVES MAINTENANCE EXPENSE

The Locomotive Booster serves railroads in two definite capacities—as a power unit and as a means to reduce maintenance.

Primarily, it offers the most economical method of securing extra power to increase gross ton miles per hour. It is one of the important elements that make Super-Power Locomotives the efficient power plants they are today.

On road engines, the Booster gives the added punch that gets underway heavy trains the locomotive can handle at speed. It speeds up passenger, freight and yard service. It gives power when most needed—for starting, accelerating, and to maintain speed on heavy grades. Not required at road speeds, it is cut out. Maximum operating economy results from capitalizing idle weight and spare steam.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK CHICAGO MONTREAL

10, 1863, at Savannah, Ga., and was graduated from the University of the South at Sewanee, Tenn., in 1883. During the same year he began railway work on the Central of Georgia as a locomotive fireman. He entered the shops of the Savannah, Florida & Western, now part of the Atlantic Coast Line, as a machinist's apprentice in 1884, and served three years, working about one-quarter of this time in the drawing office. From 1887 to 1890 he was in the locomotive test department of the New York, Lake Erie & Western, now the Erie. In 1890, Mr. Elliott was appointed assistant to the mechanical engineer of the Chicago, Milwaukee & St. Paul, now the Chicago, Milwaukee, St. Paul & Pacific, and in 1893, was promoted to signal engineer of that road. He remained in the latter position for 10 years, leaving in September, 1903, to become signal engineer of the New York Central & Hudson River, now the New York Central, which position he held for 30 years until his retirement on September 1, 1933. Mr. Elliott was a charter member of the Railway Signaling Club, now the Signal Section of the American Railway Asso-

W. H. Elliott

ciation, and has always been a leader in its activities, serving as vice-president and acting president in 1898, and as chairman of the Signal Section in 1918. Mr. Elliott has written extensively on railway signaling, two of his books being "Block and Interlocking Signals" and the "ABC of Railroad Signaling."

R. H. M. Robinson, who has been identified with the **Insulite Company** in an executive capacity since December, 1931, has been elected president, with headquarters at Minneapolis, Minn., succeeding **E. W. Backus. C. S. Pope,** who has been assistant to Mr. Robinson, has been elected executive vice-president, and **E. H. Batchelder, Jr.,** general sales manager, has been named vice-president in charge of sales. **E. W. Morrill,** assistant to the general sales manager, has been appointed sales manager, and **V. L. Larson,** also assistant to the general sales manager, has been appointed assistant sales manager, hardboard sales.

Mr. Robinson was born on April 2, 1875, at Ravenna, Ohio, and was graduated from the United States Naval Academy in 1896 and from the University of Glasgow in 1898. From the latter year until 1902, Mr. Robinson was in government service as a naval constructor at Cramp's Shipyard at Philadelphia, Pa., after which, until 1905, he was in charge of the construction of the battleship Connecticut at the New York Navy Yard. From 1905

R. H. M. Robinson

to 1913 he was naval constructor and assistant to the chief constructor in charge of the design and construction of all ships for the federal government, resigning at the end of this period to enter private business. Since then he has served as president of the Merchant-Sterling Corporation, the American Ship & Commerce Corporation and the Sterling Iron & Railway Company, and as chairman of the executive committee and president of the Georgian Manganese Company. He has also been chairman of the board and president of the Ruman Finance & Construction Corporation, a member of the executive committee of W. A. Harriman & Co., Inc., and a director of many other industrial concerns. Mr. Robinson has been connected with the Insulite Company since 1931.

Mr. Batchelder has had more than 15 years' railroad service. Prior to the World War he served successively as secretary, chief clerk and assistant to the vice-president of the Chicago & North Western, and during the war he was connected with the United States Railroad Administration in various capacities. From 1920 to 1923 he was assistant to the president of the

E. H. Batchelder, Jr.

Union Pacific System, leaving railroad service in the latter year to enter the railroad supply field. During the next few years he represented various companies in the sale of their products to the railroads, for which purpose he organized in 1927 the United States Supply Company and the Federal Equipment Corporation, becoming president of both companies. On September 1, 1932, Mr. Batchelder was appointed general sales manager of the Insulite Company, which position he held until his recent appointment as vice-president in charge of sales.

OBITUARY

Charles L. Dinsmore, who retired as western representative of the Pocket List of Railroad Officials, with headquarters at Chicago in 1923, died at DeBeque, Colo. on October 16 of heart failure.

F. K. LeVake, district sales manager of the National Malleable & Steel Castings Company, Cleveland, Ohio, died in that city on October 7. Mr. LeVake had been in the service of this company for 33 years.

Charles W. Marsh, since 1927 director of purchases for the General Cable Corporation, New York, died on September 25 at his home in Upper Montclair, N. J., in his seventieth year. Mr. Marsh had held various executive positions and subsequently served as secretary-treasurer of the Brush Electrical Illuminating Company and then as secretary of its successor, the United Electric Light & Power Company. In 1901, he was appointed general manager of the Northeastern and Eastern sales districts of the Standard Underground Cable Company, and shortly afterward became metal buyer, which position he held until the formation of the General Cable Corporation in 1927, when he became director of purchases for that corporation.

Construction

ATCHISON, TOPEKA & SANTA FE-SOUTHERN PACIFIC-UNION PACIFIC.—The California Railroad Commission handed down an order on October 4, approving the application of these railroads for the construction of a union passenger station in the Plaza area of Los Angeles, Cal., and it is expected that construction is to be commenced as promptly as possible. A brief description of the proposed station was presented in the *Railway Age* for September 30, page 480.

BOSTON & MAINE-DELAWARE & HUDSON.—The New York Public Service Commission has approved as not excessive a low bid of $38,601 submitted by I. M. Ludington's Sons, Inc,. Rochester, N. Y., covering the elimination of the Hubbs and Dyers crossings of the Boston & Maine and Delaware & Hudson in the town of Clifton Park, Saratoga county, N. Y. The commission directed the railroads to award the contract and begin work as soon as practicable.

CALIFORNIA & OREGON COAST.—Examiner M. S. Jameson of the Interstate Commerce Commission has recommended

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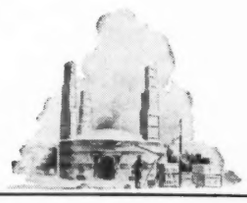

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NEW YORK **CHICAGO**

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in a proposed report that the commission deny the application for authority to construct an extension from the present terminus at Waters Creek, Ore., to Crescent City, 82 mi., for which the company has sought a loan from the Public Works Administration. It had previously applied to the Reconstruction Finance Corporation for a loan of $5,718,565 but later withdrew the application. The examiner says that the applicant's plan, in a broad sense, has merit from the fact that the territory is rich in resources and without a railroad but that upon the present showing Division 4 should not accept its estimates of earnings nor find that public convenience and necessity require the proposed construction. If private capital for the enterprise were forthcoming, as a result of intimate knowledge of the local conditions and a thorough study of the traffic possibilities, he said, favorable consideration should be given to the application.

CHICAGO & EASTERN ILLINOIS.—Four sites on this road have been chosen by the state of Illinois for the construction of grade separation structures, using funds allocated for the purpose by the federal government. Three of these are to be highway subways, which will be located at Danville, Alvin and Gerald. The first two will cost approximately $25,000 each and the third about $12,000, all costs being exclusive of the road work involved. The fourth structure, which will be a highway overpass, will be located at Cypress. Although the construction of these grade separations has been approved by the state, they are also subject to the approval of the federal government. It is expected that contracts for the projects will be awarded by the state highway department rather than by the railroad.

ERIE.—The application of this road for a rehearing in respect to an order directing that Southwestern boulevard shall cross the railroad by placing the highway above the railroad in the town of Hamburg, Erie county, N. Y., has been denied by the New York Public Service Commission. The estimate of cost of this work is $123,000 as was reported in the *Railway Age* of September 23.

LEHIGH VALLEY.—The New York Public Service Commission has directed the elimination of the Caywood and Van Vleets crossings of this road in Lodi, Seneca county, N. Y. The order provides that the crossings shall be eliminated by placing the grade of the highway below the grade of the railroad at the Caywood crossing and by closing Van Vleets crossing across the railroad and diverting highway traffic to a highway to be constructed east of the railroad. The cost of the work is estimated at $174,700 by the railroad company and at $145,800 by the Department of Public Works which filed the plan. The operation of the order is suspended until the commission shall otherwise direct.

MONTANA - WYOMING.—This company has filed an application with the Montana Public Works Advisory Board seeking a loan of $80,000,000 for the construction of a 600-mile railroad extending between Scobey, Mont., a point on the Great Northern, to Craig, Colo., the western terminus of the Denver & Salt Lake. This move revives a project that has lain dormant since 1923 when lack of funds to carry on the construction work caused abandonment of the project after considerable grading had been done and a small mileage of track completed. From Scobey the line would extend almost directly south through Miles City, Mont., across the state of Wyoming, touching Sheridan, Buffalo, Casper and Rawlins, and thence to Craig. It would intersect six east and west railroads at five points, including the Great Northern at Wolf Point, Mont.; the Chicago, Milwaukee, St. Paul & Pacific and the Northern Pacific at Miles City; the Chicago, Burlington & Quincy at Sheridan; the Burlington and Chicago & North Western at Casper; and the Union Pacific at Rawlins. Through service to Denver, Colo., would be made possible through trackage rights over the Denver & Salt Lake from Craig, while direct connection to the South and Southwest would be made possible by the Dotsero cutoff which is now under construction. Promoters of the line contend that 81,000 men would be given work during its construction and that 40,000 persons would be employed in operating the road and in development that would be encouraged along the route.

NEW YORK CENTRAL.—The New York Public Service Commission has approved the detailed plans, specifications and an estimate of cost of $298,400, excluding land and property damages, for the elimination of the Railroad avenue crossings of this road in Palmyra, Wayne county, N. Y. The commission authorized the railroad to do certain work in connection with the elimination by direct employment of labor and purchase of materials for an amount not to exceed the railroad's estimate of $23,200.

NEW YORK CENTRAL.—The elimination of eight grade crossings of this road in and near the village of Weedsport, Cayuga county, N. Y., has been ordered by the New York Public Service Commission. The crossings include the Jordan, Putnams and Brutus crossings near the village and those at Goff, Seneca, Horton, South and Willow streets in the village. A plan for the elimination of these crossings and approved by the commission calls for a change of location of the railroad. The commission amended its previous order providing for the elimination of the Brutus street crossing by relocating the railroad, in the same manner as the other crossings will be eliminated, instead of by means of a structure as previously ordered. The operation of the order was suspended until the commission shall otherwise direct. The estimated cost of the track relocated is $601,485 exclusive of freight house and yard facilities for which no estimates were submitted but should cost about $50,000. The commission directed the New York Central to prepare the plans, estimates of cost and specifications for the project.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon a line between Nutt, N. M., and Lake Valley, 12.72 miles.

ATCHISON, TOPEKA & SANTA FE AND DENVER & RIO GRANDE WESTERN.—*Joint Track.*—The Interstate Commerce Commission has authorized these companies to operate over each other's lines for a distance of 1.4 miles in Freemont County, Colo., which will have the effect of giving them jointly a double track and added siding facilities over this section.

BALTIMORE & OHIO.—*Abandonment.*—The Interstate Commerce Commission has authorized this company and the Little Kanawaha to abandon a part of the line of the latter company extending from Placid Station, W. Va., to Owensport, 21 miles.

BALTIMORE & OHIO.—*Note Issue Unnecessary.*—The Interstate Commerce Commission has rescinded, at this company's request, its authorization for the issue of $3,000,000 of 3-year 5½ per cent convertible notes, secured by a pledge of $5,000,000 of series C, 6½ per cent refunding and general mortgage bonds. The notes were to be issued to provide in part the cash needed to meet a maturity of $5,000,000 of Cleveland, Lorain & Wheeling bonds, which the Company now finds it can advance temporarily from its treasury.

CALIFORNIA-WESTERN R.R. & NAVIGATION.—*Bonds.*—This company has been authorized by the Interstate Commerce Commission to issue not exceeding $495,000 of 6 per cent first mortgage bonds to be offered to holders of an equivalent issue of 6 per cent bonds which matured October 1. The holders of more than 93 per cent of these bonds have indicated their willingness to make the exchange.

CHESAPEAKE & OHIO, et. al.—*Trackage Rights at Cincinnati and Covington.*—The Interstate Commerce Commission has authorized the Covington & Cincinnati Elevated Railroad and Transfer and Bridge Company to extend its lines by leasing certain tracks in Covington from the Chesapeake & Ohio, and the Louisville & Nashville. The two latter companies have been authorized to extend their lines by trackage rights over the Bridge Company and the Cincinnati Inter-Terminal R.R. in Covington.

CHICAGO, ROCK ISLAND & PACIFIC.—*Tentative Valuation As of 1932.*—The Interstate Commerce Commission, Division 1, has issued a tentative valuation report as of December 31, 1932, on the value for rate-making purposes of the properties owned by this company and its affiliated lines for which application for consolidation under Section 5 of the interstate commerce act has been conditionally found to be in the public interest. For the twelve corporations included in the proposed plan of consolidation the report states a final value of $430,495,000 for the carrier prop-

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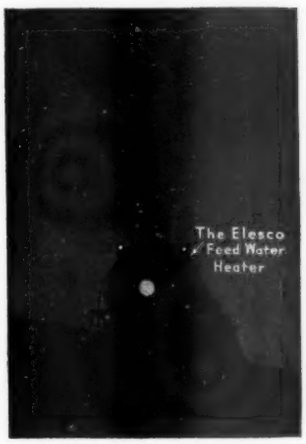
Here Are *Pertinent* Facts...

on what reclaiming waste heat by *Elesco* feed water heaters will do —



Boiler capacity increased approximately 15 per cent.

Cylinder horsepower increased due to reduction in back pressure.

Overall boiler efficiency increased 12 to 15 per cent, varying directly with work done by the engine. In figuring new locomotives, the loaded weight of boilers is decreased approximately 13 per cent over non-feed-water-heater boilers for equal capacities.

Tender capacity increased approximately 15 per cent.

Fuel savings of 12 to 15 per cent, depending on operating conditions.

ALL of these benefits are obtained through the simple process of preheating the boiler feed water by diverting a portion of the exhaust steam to an Elesco feed water heater.

Not only is the process simple, but the principle is sound and the equipment incorporates the practicality, simplicity and ruggedness of design, so necessary for reliability and high efficiency.

Locomotives need Elesco feed water heaters for the utmost economy of operation and maximum sustained boiler capacity. Nearly 4,000 are now equipped.

THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, INC.

60 East 42nd Street NEW YORK — Peoples Gas Building CHICAGO

ELESCO

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Canada: THE SUPERHEATER COMPANY, LTD., Montreal

Superheaters - Feed Water Heaters - Exhaust Steam Injectors - Superheated Steam Pyrometers - American Throttles

erty used, $1,716,729 for the property owned but not used, and $8,734,462 for non-carrier property. The grand total for used property, including corporations not included in the proposed consolidation, is $437,176,012. The total operated system mileage is 7,849 of first main track. The outstanding capitalization as of 1932 was $443,708,295, exclusive of $100,569,111 of inter-company holdings and the investment in road and equipment is stated in the books as $510,980,121. With readjustments required by the accounting examination, the report says, this would be reduced to $491,686,624. The report says the original cost to date cannot be definitely ascertained but the approximate original cost, in part estimated, including portions of jointly owned properties but exclusive of lands, is placed at $503,346,456 for the total used by the system and $495,458,587 for that owned.

EAST TEXAS & GULF.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Hyatt, Tex., to Wurtsbaugh, 9.6 miles.

FLORIDA EAST COAST.—*Abandonment.*—The receivers have applied to the Interstate Commerce Commission for authority to abandon the Orange City branch from New Smyrna, Fla., to Orange City Junction, 27.42 miles.

FORT BENNING.—*Acquisition Authorization Denied.*—The Interstate Commerce Commission, upon reargument, has reversed the finding in its previous report approving the acquisition and operation by the Fort Benning Railroad Company of a line owned by the federal government from a connection with the Fort Benning military reservation to the lines of the Central of Georgia and the Seaboard Air Line in Georgia, 6.8 miles, and has rescinded the certificate previously issued authorizing such acquisition. This action was taken after protest by the Central of Georgia which contended, among other things, that the War Department would not effect any substantial saving under the arrangement but that the railroad would be in a position to demand divisions from the Central and the Seaboard. The commission pointed out that it has taken the position that independent operation of numerous short lines is not conducive to economies in transportation. Commissioners Brainerd, Farrell, Meyer, and Porter dissented.

ILLINOIS CENTRAL.—*Abandonment.*—The Interstate Commerce Commission has authorized this company to abandon a line extending 2.5 miles from Jeffries Mine to a junction with the Chicago & Eastern Illinois near Johnson City, Ill., and to operate over 1.5 miles of the latter company's line into Johnson City.

KANSAS CITY SOUTHERN.—*Lease Authorization Modified.*—The Interstate Commerce Commission, after oral argument before the full commission, has issued a modification of the order in which it previously had conditionally authorized the Kansas City Southern to acquire control by lease of the properties of the Texarkana & Fort Smith located in Texas by striking out the condition that the second paragraph of section 5 of the proposed lease be eliminated. This section of the lease provided that the K.C.S. did not assume any obligation to maintain general offices, machine shops, roundhouses and terminal facilities at any particular place or places, in accordance with the Texas laws, but should have the right to relocate them. The company showed that under normal operating conditions the proposed lease of the Texas lines would result in an annual saving of $81,626 from the unification of operations, the discontinuance of general offices at Texarkana, and the removal to Shreveport, La., and Kansas City, Mo., of many of the activities at Texarkana which cause duplication of work. The commission also made a finding that the lease would be in harmony with and in furtherance of its consolidation plan. Commissioner McManamy, in a dissenting opinion, disagreed with the findings of the majority, taking the position that the commission should disclaim jurisdiction, as in the Missouri Pacific case, and leave the matter to the courts. Chairman Farrell and Commissioners Atchison and Lee also dissented.

KANSAS CITY TERMINAL.—*R. F. C. Loan.*—This company has withdrawn its application to the Reconstruction Finance Corporation for a loan of $700,000.

MISSOURI PACIFIC.—*Abandonment.*—Examiner R. R. Molster of the Interstate Commerce Commission, in a proposed report, has recommended that the commission authorize the abandonment of part of a branch line from Fort Scott, Kan., to Lomax, 90.5 miles, and part of a branch line from Mound City, Kan., to LeRoy, 46.8 miles. The report says that whatever feeder value the branch lines once may have had has largely diminished owing to successful competition by highway transportation agencies, and adverse economic conditions have served only to accentuate the decline in railroad traffic. The applications were opposed by the Kansas Corporation Commission and various protestants in the affected territory.

PENNSYLVANIA.—*Supreme Court to Review Anti-Trust Case.*—The Supreme Court of the United States on October 16 granted the petition of the Interstate Commerce Commission for a writ of certiorari providing for a review of the decision of the circuit court of appeals for the third circuit which had set aside the commission's order directing the Pennsylvania and the Pennsylvania Company to divest themselves of stock interests in the Wabash and the Lehigh Valley.

SOUTHERN PACIFIC.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire the property of the Porterville Northeastern in Tulare county, Calif.

SUMPTER VALLEY.—*R.F.C. Loan.*—Division 4 of the Interstate Commerce Commission has approved an increase from $68,500 to $100,000 in the loan from the Reconstruction Finance Corporation which it had previously approved.

TEXAS & NEW ORLEANS.—*Abandonment and Trackage Rights.*—The Interstate Commerce Commission has authorized this company and the Texas Midland to abandon the line of the latter extending from Greenville, Tex., northeasterly to Commerce, 14.2 miles and in lieu thereof to operate jointly over an adjacent line of the St. Louis-Southwestern between those points.

UNION PACIFIC.—*Final Valuation Report.*—The Interstate Commerce Commission has issued a final valuation report finding the total final value for rate-making purposes of the properties of the various carriers embraced in the Union Pacific system and used for common-carrier purposes to be $501,258,082 as of the respective valuation dates. For the Union Pacific the date was 1919 and for other properties the dates were 1916 and 1917. The aggregate tentative value had been placed at $492,278,680. The final value includes $243,440,000 for the Union Pacific, $104,000,000 for the Oregon Short Line, and $121,748,600 for the Oregon-Washington. The books of the Union Pacific, the controlling company, record an investment on valuation date of $331,860,798. If certain readjustments were made as developed by the accounting examination, the report says, this would become $332,322,281. "Owing to lack of proof we have been obliged to exclude from our conditional restatement of the investment account large sums of money alleged to have been expended for road and equipment in the past but incorrectly charged to other accounts. But we are convinced that millions of dollars have been spent by this carrier and its affiliated lines for capital items which have not been entered in the investment account and which should be included in a restatement thereof if the correct amounts could be established." The Union Pacific had outstanding on valuation date a total par value of $534,428,250 in stocks and long-term debt.

Valuation Reports

The Interstate Commerce Commission has issued final valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes as of the respective valuation dates as follows:

East Erie Commercial	$22,800	1927
Kanawha Central	80,000	1927
Maryland & Delaware Coast	635,000	1927
Santa Fe Northwestern	780,000	1927
Berlin Mills	718,000	1927
Marshall, Elysian Fields & Southeastern	265,000	1927

Average Prices of Stocks and of Bonds

	Oct. 17	Last week	Last year
Average price of 20 representative railway stocks	37.41	40.74	24.45
Average price of 20 representative railway bonds	67.98	68.30	61.05

Dividends Declared

Elmira & Williamsport.—$1.15, semi-annually, payable November 11 to holders of record October 20.

United New Jersey R. R. & Canal.—$2.50, quarterly, payable January 10 to holders of record December 20.

Virginia Railways.—Preferred, $1.50, quarterly, payable November 1 to holders of record October 14.

York Rys.—Preferred, 62½c, quarterly, payable October 31 to holders of record October 21.

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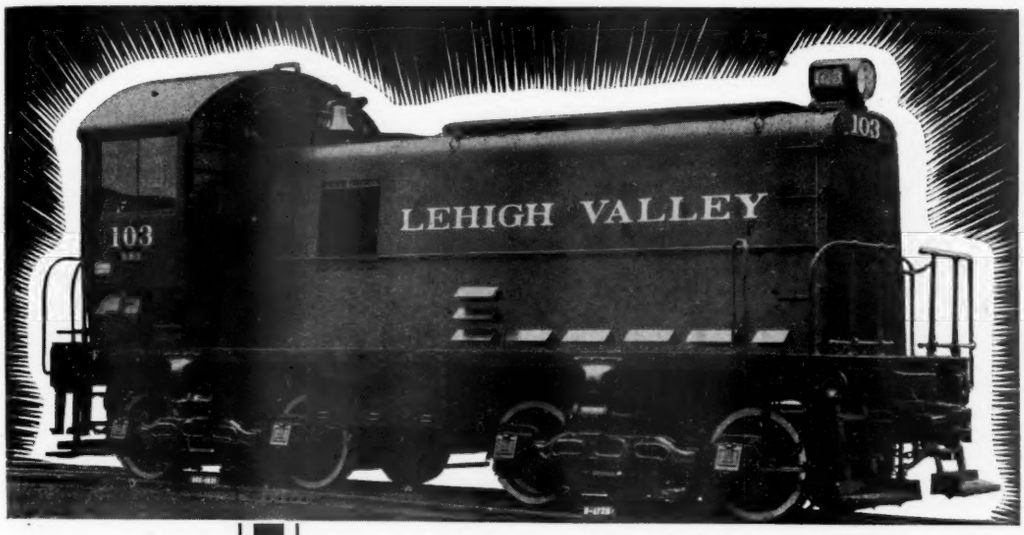

300 H. P.
Total Weight
131,000 lb.
Tractive Power, Starting,
39,300 lb.

ALCO DIESEL LOCOMOTIVES

THE Alco Diesel Locomotive is much more than just another Oil-Electric.

Designed and built by an organization which has been cooperating with railway officials on locomotive design, almost since railroads were new, it naturally followed that the fullest consideration was given to the railroad man's operating and maintenance problems.

Therefore, when considering this new class of motive power, do not overlook ease of operation and maintenance.

These are important and attractive features of the Alco Diesel Locomotive.

American Locomotive Company
30 Church Street New York N.Y.

600 H. P.
Total Weight
200,000 lb.
Tractive Power, Starting,
60,000 lb.

Railway Officers

M. W. Clement Succeeds Elisha Lee; Other P.R.R. Executive Changes

M. W. Clement, vice-president in charge of the operating department of the Pennsylvania system, with headquarters at Philadelphia, Pa., has been advanced to the position of vice-president of the company, with the same headquarters, to fill the position formerly occupied by the late Elisha Lee. Julien L. Eysmans, vice-president in charge of the traffic department, has been appointed vice-president assistant to the president, with headquarters as before at Philadelphia. John F. Deasy, vice-president in charge of operation of the Central region, with headquarters at Pittsburgh, Pa., has been appointed vice-president in charge of the operating department of the system, with headquarters at Philadelphia, succeeding Mr. Clement. Walter

M. W. Clement

S. Franklin, receiver of the Wabash, with headquarters at St. Louis, Mo., has been appointed vice-president in charge of the traffic department at Philadelphia, succeeding Mr. Eysmans. Mr. Deasy will be replaced by E. W. Smith, now acting vice-president in charge of the Eastern region at Philadelphia. A photograph and sketch of Mr. Smith's railway career was published in the *Railway Age* of January 28, 1933, page 127, in connection with his resignation as co-receiver of the Seaboard Air Line and his return to the service of the Pennsylvania. Charles S. Krick, who has been on leave of absence on account of illness since last April, will return to his duties as vice-president in charge of the Eastern region, with headquarters at Philadelphia.

Mr. Clement was born at Sunbury, Pa., on December 5, 1881. He was educated at Trinity College, Hartford, Conn., and entered the service of the Pennsylvania on August 1, 1901, as a rodman in the office of the principal assistant engineer of the United Railroads of New Jersey (now part of the Pennsylvania). He served successfully as a transitman and assistant supervisor, and in January, 1910, was promoted to supervisor in the office of the general manager, at Philadelphia. Mr. Clement was transferred to the Manhattan division in June, 1913, and to the Pittsburgh division in December, 1913, to act in the same capacity. Mr. Clement's next transfer was to the New York Philadelphia & Norfolk (now part of the Pennsylvania) in December, 1914, as division engineer, and in August, 1916, he returned to the Pennsylvania as division engineer to study improvements in and around New York. He became division engineer under the principal assistant engineer of the New Jersey division in November, 1916, and in June, 1917, he was made superintendent of the New York, Philadelphia & Norfolk. In September, 1918, under the United States Railroad Administration, he was promoted to superintendent of freight transportation, Pennsylvania Railroad Eastern Lines, and, four months later, was appointed acting superintendent of passenger transportation. In March, 1920, upon the return of the railroads to private operation and the inauguration of the Regional organization by the Pennsylvania, he was appointed general superintendent of the Lake division, with headquarters at Cleveland, Ohio, retaining that position until March 1, 1923, when he was promoted to general manager of the Central region, with office in Pittsburgh, Pa. Mr. Clement was advanced to the newly created position of assistant vice-president in charge of operation, with headquarters at Philadelphia, in October, 1925, and in September, 1926, he was appointed vice-president in charge of operation, the position he held at the time of his recent appointment. In his new position, Mr. Clement will have general supervision, under the president, of all departments of the railroad.

Mr. Eysmans was born in Brussels, Belgium, on March 18, 1874. Upon coming

Julien L. Eysmans

to this country, he was educated in the public schools of Baltimore, Md. He entered the service of the Pennsylvania on May 1, 1891, as a messenger in the office of the division freight agent at Baltimore and on October 1, 1893, he became a clerk at Washington, D. C., returning a year later to Baltimore, in the same capacity. On August 1, 1896, he was promoted to freight solicitor at Baltimore and on April 15, 1898, he was appointed also agent of the Anchor Line. He was transferred to Reading, Pa., as freight solicitor, on March 26, 1900, and was appointed district freight solicitor at Baltimore on March 9, 1903. Mr. Eysmans was appointed eastern superintendent of the Star Union Line at New York on January 1, 1904, and on February 28, 1906, he was promoted to general freight agent of the Cumberland Valley, a part of the Pennsylvania. He was appointed division freight agent of the Pennsylvania at Pittsburgh, Pa., on June 1, 1911, and on May 8, 1912, he was promoted to assistant general freight agent at Philadelphia. On May 1, 1916, he was promoted to general freight agent and at the termination of federal control on March 1, 1920, Mr. Eysmans was promoted to traffic manager of the Eastern region, being transferred to the

John F. Deasy

Central region at Pittsburgh in the same capacity, on October 24, 1923. On July 1, 1924, Mr. Eysmans was promoted to the newly created position of assistant general traffic manager and in January, 1925, he was appointed general traffic manager of the system. In August of the same year, he was elected vice-president in charge of traffic, the position he held at the time of his recent appointment.

Mr. Deasy was born on March 25, 1882, at Hammerton, Pa. He was educated in the public schools, Philadelphia Textile School, and Brown Preparatory School and entered railway service on June 10, 1901, as telegraph operator for the Pennsylvania, serving consecutively to September 13, 1907, as clerk and operator, and as clerk in yards and at stations. From August 7, 1908, to May 26, 1918, he served as acting extra agent of the Amboy division, acting terminal and shipping agent at South Amboy, extra agent and supervising agent on the Trenton division and assistant freight claim agent for the same road. On the latter of the above mentioned dates he was appointed superintendent of stations and transfers, lines east of Pittsburgh, and two years later he became assistant chief of transportation in charge of freight transportation. On February 1, 1927, he was promoted to chief of

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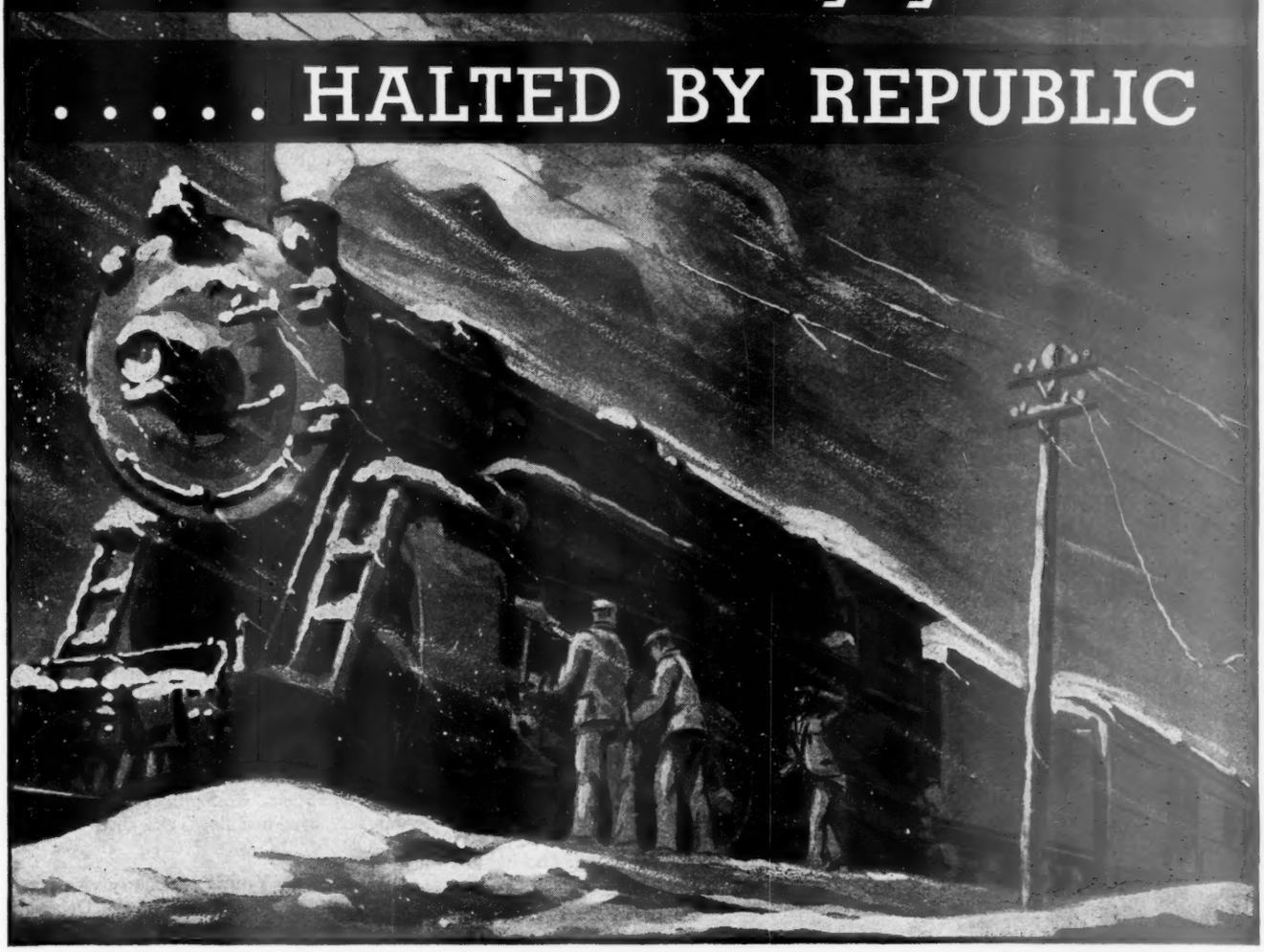
AN EPIDEMIC *Of Forging Failures*

. . . . . HALTED BY REPUBLIC



Every time the temperature dropped, forging failures increased. Research showed that ordinary forging steels are seriously affected by cold weather. They become brittle. » » » This problem has now been successfully solved by Agathon Alloy Steels that perform regardless of atmospheric conditions. » » » These steels are made tough to withstand the shocks of railroad service and they stay tough no matter how the thermometer drops. » » » Whether it be springs, rods, axles, motion work, pins, tubes or staybolts, Republic Steel Corporation has carefully worked out a material specifically to meet the conditions of modern railroading; a material that will be stronger and last longer. » » » Wherever you use iron or steel, consult Republic Steel Corporation for better materials.

Toncan Iron Boiler Tubes, Pipe, Plates, Culverts, Rivets, Staybolts, Tender Plates and Firebox Sheets • Sheets and Strip for special railroad purposes • Agathon Alloy Steels for Locomotive Parts • Agathon Engine Bolt Steel • Agathon Iron for pins and bushings • Agathon Staybolt Iron • Climax Steel Staybolts • Upson Bolts and Nuts • Track Material, Maney Guard Rail Assemblies • Enduro Stainless Steel for dining car equipment, for refrigeration cars and for firebox sheets • Agathon Nickel Forging Steel.

The Birdsboro Steel Foundry & Machine Company of Birdsboro, Pa. has manufactured and is prepared to supply under license, Toncan Copper Molybdenum Iron castings for locomotives.

CENTRAL ALLOY DIVISION, MASSILLON, OHIO

AGATHON STEELS

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO

TONCAN COPPER MOLYBDENUM IRON

freight transportation and in June, 1928, he became assistant vice-president in charge of operation. Mr. Deasy was appointed vice-president of the Central region of the Pennsylvania at Pittsburgh, Pa., in January, 1931.

Mr. Franklin was born at Ashland, Md., on May 24, 1884, and received his higher education at Harvard University, Cambridge, Mass., from which he was graduated in 1906. He entered the service of the Pennsylvania on October 1st of the same year as a clerk in the transportation department at Philadelphia, Pa. In the following year he was transferred to the freight traffic department, and after successive promotions in that department, he became southern freight agent at Atlanta, Ga., in January, 1914. In 1917 he was furloughed for military duty and served as major and later as lieutenant-colonel in the transportation corps of the A.E.F. At the close of the war Mr. Franklin became president of the American Trading Company in New York, returning in 1928 to the service of the Pennsylvania. On July 1 of that year he was appointed general agent at Detroit, Mich. A year later he became general superintendent of the Northwestern region of the Pennsylvania

Walter S. Franklin

and during the latter part of 1929 he was elected president of the Detroit, Toledo & Ironton. He remained in this latter position until January, 1931, when he again returned to the Pennsylvania as assistant to vice-president, operation. He became president of the Wabash in October, 1931, and on December of that year when this road went into receivership Mr. Franklin was appointed a co-receiver for the road, the position he held until his recent appointment on the Pennsylvania.

FINANCIAL, LEGAL AND ACCOUNTING

John Paul, assistant to the comptroller of the Pennsylvania, with headquarters at Philadelphia, Pa., has been appointed assistant comptroller, with the same headquarters. Mr. Paul was born on February 2, 1886. He attended the public schools of Philadelphia and was later graduated from the Evening School of Accounts and Finance, University of Pennsylvania. He entered the service of the Pennsylvania in November, 1903, as junior clerk in the accounting department at Philadelphia. After serving in various capacities, Mr. Paul was appointed inspector of accounts in June, 1916. During the period of federal control, he remained with the corporation. He was promoted to the position of special

John Paul

agent in April, 1926, and in November, 1927, he became chief traveling auditor. He was advanced to the position of supervisor of methods in November, 1928, serving in that capacity until April 1, 1930, when he was appointed assistant to the comptroller, the position he held at the time of his recent appointment.

OPERATING

Charles C. Barnard, superintendent on the Union Pacific at Denver, Colo., has been transferred to Green River, Wyo., to succeed **W. C. Wolcott,** who has been transferred to Denver to replace Mr. Barnard.

H. A. Connett, assistant superintendent of the Union Pacific, with headquarters at Cheyenne, Wyo., has been appointed superintendent of the Oregon division, with headquarters at Portland, Ore., succeeding **W. H. Guild,** who has been assigned to other duties.

J. P. Houston, assistant to the chief operating officer of the Minneapolis & St. Louis, has been promoted to general manager, with headquarters as before at Minneapolis, Minn. Mr. Houston succeeds to the duties of **E. E. Nash,** chief operating officer, who has resigned because of ill health, and the position of chief operating officer has been abolished.

J. P. Polk, assistant superintendent of terminals of the Louisville & Nashville, with headquarters at Nashville, Tenn., has been appointed acting superintendent of the Nashville terminals, replacing **L. G. Waldrop,** who has been granted a leave of absence. The position of assistant superintendent of the Nashville terminals has been abolished until further notice.

J. A. Glen, assistant to the general manager of the Gulf, Colorado & Santa Fe, with headquarters at Beaumont, Tex., has been appointed superintendent of the Gulf division, with headquarters at Galveston, Tex., succeeding **J. P. Cowley,** who has been appointed assistant western regional director at Dallas, Tex., on the staff of V. V. Boatner, western regional director for the federal co-ordinator of transportation, as announced in the *Railway Age* for October 7.

TRAFFIC

M. V. Simmons has been appointed joint merchandise agent for the Seaboard Air Line and the St. Louis-San Francisco, with headquarters at 1424 Exchange building, Memphis, Tenn.

E. L. Tomlinson, traveling passenger agent of the Central of New Jersey, with headquarters at Newark, N. J., has been transferred to Scranton, Pa., where he will have charge of all passenger traffic matters.

MECHANICAL

P. J. Norton, master mechanic on the Union Pacific at Kansas City, Kan., has been transferred to Pocatello, Idaho, on the Oregon Short Line (part of the Union Pacific System), where he replaces **H. Crane,** who has resigned.

OBITUARY

W. T. Dinneen, chief special agent of the Chicago & North Western, died on October 15 at his home at Chicago at the age of 59 years.

William Balfour, general transportation inspector on the Western Lines of the Atchison, Topeka & Santa Fe, with headquarters at Amarillo, Tex., died suddenly on October 12.

Horace G. Young, formerly vice-president and general manager of the Delaware & Hudson, died on October 18, at his home in Greenwich, Conn., of heart disease. Mr. Young retired from the service of the D. & H. in 1903.

* * *

The Northern Pacific's "Alaskan" Arriving at Bozeman, Mont.

Table of Operating Statistics of Railways begins on next left-hand page

PROTECTION

with

Dependable Material

RESISTANCE to wear, shock and excessive temperatures is a vital factor in selecting material which is to be carried in stock at main storehouses and outlying points.

Stocks must, of course, be on hand to protect operation, but increased service means fewer renewals and longer period between requisition.

Complete installation of all the H S G I parts listed below insures maximum economies in the storehouse, shop, roundhouse and out on the road.

H S G I

Reg. U. S. Trade Mark

Cylinder Bushings
Cylinder Packing Rings
Pistons or Piston Bull Rings
Valve Bushings
Valve Packing Rings
Valve Bull Rings
Crosshead Shoes
Hub Liners
Shoes and Wedges
Floating Rod Bushings

Parts Finished For Application

Dunbar Sectional Type Packing
Duplex Sectional Type Packing
for Cylinders and Valves
(Duplex Springs for Above
Sectional Packing)
Cylinder Snap Rings
Valve Rings All Shapes

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HUNT-SPILLER GUN IRON

Air Furnace

Operating Statistics of Large Steam Railways—Selected Items for the Month of August, 1933,

Region, road and year		Average miles of road operated	Train-miles	Locomotive-miles: Principal and helper	Locomotive-miles: Light	Car-miles: Loaded (thousands)	Car-miles: Per cent loaded	Ton-miles (thousands): Gross Excluding locomotives and tenders	Ton-miles (thousands): Net Revenue and non-revenue	Average number of locomotives on line: Serviceable	Unserviceable	Per cent unserviceable	Stored
New England Region:													
Boston & Albany	1933	402	130,966	135,774	9,081	3,396	68.2	172,778	57,961	58	47	44.8	8
	1932	402	106,798	110,597	7,887	2,875	67.9	146,984	48,556	66	53	44.4	22
Boston & Maine	1933	2,052	270,913	303,685	31,261	9,119	68.5	490,726	185,353	121	166	57.7	6
	1932	2,057	245,293	271,762	21,632	7,539	69.0	386,424	138,189	145	145	49.9	39
N. Y., New H. & Hartf.	1933	2,044	357,489	432,792	20,335	11,126	65.2	598,338	221,754	213	146	40.6	33
	1932	2,050	327,018	380,034	19,973	9,338	65.4	491,540	171,774	210	139	39.9	12
Great Lakes Region:													
Delaware & Hudson	1933	848	217,978	294,008	34,422	7,309	60.1	465,076	208,191	251	29	10.5	144
	1932	848	184,072	238,793	23,810	5,544	60.2	340,523	147,458	255	25	8.9	168
Del., Lack. & Western	1933	998	338,187	376,810	49,404	11,146	65.9	631,179	244,358	201	69	25.4	62
	1932	998	300,525	330,989	39,615	9,138	65.7	519,623	197,934	221	52	19.2	79
Erie (incl. Chi. & Erie)	1933	2,316	711,985	741,377	59,482	28,414	60.9	1,793,771	669,060	295	205	41.1	51
	1932	2,316	644,379	674,433	39,697	24,183	59.1	1,549,129	538,968	356	146	29.1	139
Grand Trunk Western	1933	1,008	194,742	196,283	2,246	5,091	60.0	306,195	102,624	68	78	53.6	4
	1932	1,023	163,411	164,334	592	3,573	60.9	212,007	71,032	99	58	36.6	34
Lehigh Valley	1933	1,341	375,060	393,956	40,906	11,378	63.3	691,254	272,767	168	154	47.9	9
	1932	1,343	303,777	313,383	23,761	8,841	63.6	522,986	199,961	191	147	43.5	48
Michigan Central	1933	1,957	386,614	387,295	14,810	11,761	57.2	715,167	227,520	134	49	27.0	33
	1932	2,115	305,415	305,575	6,463	8,717	60.6	504,011	163,547	132	71	35.1	55
New York Central	1933	6,426	1,475,793	1,584,532	108,587	54,629	58.9	3,532,497	1,476,935	544	603	52.6	14
	1932	6,432	1,230,422	1,301,022	74,832	42,752	60.5	2,616,313	1,030,049	597	701	54.0	120
New York, Chi. & St. L.	1933	1,660	503,271	526,846	5,884	14,237	59.4	863,637	299,456	127	63	33.2	8
	1932	1,661	398,820	411,586	4,931	11,741	60.2	692,071	232,776	143	99	41.0	49
Pere Marquette	1933	2,254	337,854	348,797	3,933	7,574	57.9	498,256	188,957	117	55	32.1	12
	1932	2,286	254,953	257,464	2,490	5,330	58.5	346,613	132,946	127	44	26.0	32
Pitts. & Lake Erie	1933	231	77,627	80,195	1,177	2,960	61.5	248,262	142,222	31	40	55.9	2
	1932	235	49,035	50,540	2,013	1,941	56.4	166,408	92,113	30	54	63.8	9
Wabash	1933	2,453	500,885	506,623	9,763	15,169	63.3	866,980	288,497	179	169	48.7	23
	1932	2,497	460,896	466,264	7,939	12,893	63.4	728,634	235,758	204	168	45.2	40
Central Eastern Region:													
Baltimore & Ohio	1933	6,282	1,468,006	1,791,602	216,111	43,947	59.8	3,102,477	1,433,003	721	590	45.0	79
	1932	6,277	1,154,975	1,321,927	128,555	31,239	59.3	2,075,172	874,788	789	574	42.1	251
Big Four Lines	1933	2,655	634,193	654,537	23,908	18,100	60.4	1,174,632	521,309	235	165	41.3	23
	1932	2,664	492,625	508,256	13,115	14,100	60.8	895,406	392,621	242	172	41.5	37
Central of New Jersey	1933	692	134,541	152,147	25,758	4,470	57.4	306,273	138,373	109	64	36.9	48
	1932	692	130,841	143,538	20,294	3,862	56.6	264,274	117,914	119	59	33.0	61
Chicago & Eastern Ill.	1933	939	185,115	185,675	2,880	3,773	61.5	244,735	102,276	61	112	64.7	14
	1932	939	154,715	154,893	4,199	3,077	65.7	190,945	83,338	80	81	50.6	38
Elgin, Joliet & Eastern	1933	446	84,489	85,270	1,131	2,045	58.8	165,154	82,128	70	20	21.9	18
	1932	447	58,446	58,589	572	1,276	57.0	97,842	44,411	81	9	10.3	40
Long Island	1933	396	32,546	33,788	11,456	342	51.5	24,485	9,025	30	21	41.2	..
	1932	396	29,895	31,135	10,974	318	53.2	22,943	8,610	41	9	18.6	11
Pennsylvania System	1933	10,082	2,755,511	3,075,569	315,597	95,114	62.4	6,401,694	2,922,391	1,458	965	39.8	276
	1932	10,528	2,240,985	2,474,695	233,103	72,097	62.3	4,701,685	2,035,526	2,067	476	18.7	1,060
Reading	1933	1,454	389,761	421,999	43,496	10,909	58.9	803,227	374,901	271	107	28.2	93
	1932	1,453	352,650	377,672	36,008	9,014	58.4	638,352	292,621	273	120	30.6	121
Pocahontas Region:													
Chesapeake & Ohio	1933	3,146	879,953	928,611	38,273	38,408	53.6	3,348,409	1,801,647	494	184	27.2	173
	1932	3,136	721,036	750,234	22,930	29,318	54.3	2,551,828	1,375,500	547	131	19.4	286
Norfolk & Western	1933	2,217	653,340	679,899	30,209	26,159	56.8	2,278,837	1,213,699	409	64	13.5	169
	1932	2,258	487,627	504,951	21,629	17,377	57.7	1,412,063	724,050	421	63	13.1	213
Southern Region:													
Atlantic Coast Line	1933	5,144	449,200	449,851	5,814	8,518	63.5	455,056	161,101	353	123	25.9	132
	1932	5,144	408,366	408,601	5,699	6,918	65.4	358,455	126,226	379	94	19.8	153
Central of Georgia	1933	1,904	201,719	202,447	3,463	4,406	68.4	236,324	89,803	101	42	29.4	..
	1932	1,900	181,415	183,035	2,663	3,709	67.9	194,263	68,269	91	52	36.4	3
Ill. Cent. (incl. Y. & M. V.)	1933	6,644	1,286,041	1,301,492	22,195	28,840	59.2	1,890,339	741,469	587	343	36.9	14
	1932	6,658	1,165,019	1,173,480	20,392	26,206	58.0	1,769,044	704,006	711	246	25.7	92
Louisville & Nashville	1933	5,116	977,912	1,061,270	31,749	21,938	57.1	1,588,693	759,731	326	371	53.2	12
	1932	5,258	817,451	870,433	20,847	16,889	58.4	1,169,826	543,898	426	286	40.2	171
Seaboard Air Line	1933	4,326	397,056	407,697	2,375	8,895	61.9	520,070	193,072	222	66	22.9	40
	1932	4,394	369,204	372,619	3,083	7,391	62.5	411,823	139,216	250	40	13.8	77
Southern	1933	6,602	1,097,532	1,113,362	18,926	25,034	65.5	1,388,801	523,593	700	217	23.7	195
	1932	6,656	940,257	948,183	14,549	20,826	67.2	1,094,780	392,510	741	224	23.2	280
Northwestern Region:													
Chi. & North Western	1933	8,443	975,901	1,031,726	24,900	24,247	62.4	1,468,743	509,203	576	233	28.8	139
	1932	8,443	881,474	916,347	19,559	20,503	62.0	1,225,453	388,842	634	174	21.5	278
Chicago Great Western	1933	1,463	208,606	210,163	13,520	6,547	57.1	420,600	143,723	66	32	33.0	5
	1932	1,448	182,168	182,248	12,069	5,660	58.8	355,686	127,183	68	44	39.7	14
Chi., Milw., St. P. & Pac.	1933	11,215	1,200,564	1,263,422	53,407	31,221	58.6	2,000,211	772,149	663	226	25.5	259
	1932	11,246	1,113,340	1,166,737	55,721	26,878	59.6	1,731,850	683,441	749	155	17.1	375
Chi., St. P., Minneap. & Om.	1933	1,681	213,811	220,829	9,710	4,572	66.3	276,443	107,168	126	27	17.6	59
	1932	1,714	221,473	229,691	9,840	4,276	65.3	260,519	110,046	141	31	17.9	69
Great Northern	1933	8,424	671,939	677,265	18,689	22,311	60.1	1,553,546	709,663	464	145	23.8	133
	1932	8,432	595,098	598,274	14,561	16,426	62.8	1,049,957	456,858	489	122	20.0	152
Minneap., St. P. & S. St. M.	1933	4,291	347,832	352,733	3,517	8,060	63.3	479,419	205,517	126	40	24.2	8
	1932	4,325	350,973	354,971	1,962	6,698	64.0	388,630	161,878	147	50	25.3	14
Northern Pacific	1933	6,416	610,063	658,327	44,822	18,523	60.4	1,169,696	453,871	358	168	32.0	42
	1932	6,397	560,438	593,745	35,053	15,057	60.9	949,152	355,564	394	130	24.7	104
Oreg.-Wash. R. R. & Nav.	1933	2,187	157,878	164,220	10,955	3,920	66.9	228,203	90,949	88	39	30.7	25
	1932	2,186	147,969	151,619	7,688	3,336	66.2	193,305	74,325	100	34	25.7	43
Central Western Region:													
Alton	1933	951	189,514	194,477	2,048	3,920	57.4	256,488	88,708	58	40	40.4	1
	1932	951	192,236	196,950	1,112	3,967	55.6	257,997	86,190	74	38	33.8	12
Atch., Top. & S. Fe (incl. P. & S. F.)	1933	11,586	1,312,747	1,411,024	57,464	36,035	62.7	2,201,626	721,521	625	295	32.0	199
	1932	11,600	1,338,259	1,424,112	54,052	35,288	60.8	2,220,753	713,763	737	194	20.9	306
Chi., Burl. & Quincy	1933	9,157	1,108,732	1,141,771	28,880	27,505	57.4	1,692,534	665,828	415	140	25.2	27
	1932	9,210	978,098	998,196	26,289	23,062	57.5	1,376,198	556,391	506	143	22.0	98
Chi., Rock I. & Pac. (incl. Chi., Rock I. & Gulf)	1933	8,333	975,829	990,747	5,323	20,550	60.3	1,262,891	472,281	455	158	25.7	94
	1932	8,342	973,298	987,399	5,032	20,154	61.4	1,233,384	472,780	497	145	22.6	157
Denver & R. G. Wn.	1933	2,478	210,482	233,432	27,384	6,383	63.4	390,903	149,560	202	41	16.9	50
	1932	2,514	185,988	202,743	22,257	5,296	63.8	313,253	109,594	207	31	13.0	71
Los Angeles & Salt Lake	1933	1,239	134,493	147,128	15,311	3,461	66.2	203,485	76,812	70	32	31.1	11
	1932	1,240	133,564	145,835	13,418	3,468	67.0	205,661	79,815	79	27	25.4	19
Oregon Short Line	1933	2,470	250,195	266,722	22,670	6,704	61.5	404,216	145,873	123	69	36.0	31
	1932	2,472	211,830	217,364	9,354	5,231	63.5	301,831	107,573	153	37	19.5	78
Southern Pacific—Pacific Lines	1933	8,836	1,000,948	1,065,445	104,693	30,402	62.4	1,868,651	629,193	523	386	42.5	164
	1932	8,911	967,405	1,028,429	95,566	27,244	60.3	1,701,391	533,270	559	332	37.2	182
Union Pacific	1933	3,768	792,064	811,635	34,867	29,030	60.1	1,757,811	561,144	359	109	23.3	169
	1932	3,768	776,195	794,974	31,722	26,427	57.4	1,643,319	495,527	383	80	17.3	191
Southwestern Region:													
Gulf, Colo. & S. Fe	1933	1,943	174,826	175,768	2,537	3,959	65.0	245,843	100,433	88	36	29.0	24
	1932	1,943	174,968	178,408	2,466	3,927	60.8	250,907	97,911	108	19	15.3	45
Mo.-Kans.-Texas Lines	1933	3,282	343,881	346,106	4,648	8,502	62.4	491,556	175,587	166	64	28.0	86
	1932	3,282	312,178	313,850	4,307	7,602	60.9	451,049	163,656	158	66	29.3	83
Missouri Pacific	1933	7,384	1,048,386	1,072,054	24,023	28,042	60.3	1,755,973	661,264	397	162	29.0	130
	1932	7,409	969,097	988,048	21,894	23,512	59.7	1,451,908	524,175	496	121	19.6	238
St. Louis-San Francisco	1933	5,191	616,791	623,973	7,608	13,393	61.6	819,061	322,064	391	85	17.9	141
	1932	5,193	563,068	566,869	6,074	12,077	60.2	743,940	284,460	399	81	16.9	162
St. Louis Southwestern Lines	1933	1,872	197,313	205,003	2,757	4,277	64.7	244,900	89,230	96	37	28.1	17
	1932	1,902	159,734	164,604	2,143	3,440	65.3	191,349	69,109	111	28	20.2	43
Texas & New Orleans	1933	4,474	439,654	439,751	3,095	9,176	62.8	546,530	197,593	211	95	31.2	54
	1932	4,588	429,649	430,130	4,794	7,964	59.1	485,319	159,591	228	72	23.9	66
Texas & Pacific	1933	1,946	213,209	213,220	1,324	6,117	65.7	365,589	131,137	172	65	27.4	78
	1932	1,946	211,316	211,316	970	5,474	65.7	333,945	113,363	154	94	37.9	42

Compiled by the Bureau of Statistics, Interstate Commerce Commission. Subject to revision.

Compared with August, 1933, for Roads with Annual Operating Revenues Above $25,000,000

Region, road and year	Average number of freight cars on line: Home	Foreign	Total	Per cent unserviceable	Gross ton-miles per train-hour, excluding locomotives and tenders	Gross ton-miles per train-mile, excluding locomotives and tenders	Net ton-miles per train-mile	Net ton-miles per loaded car-mile	Net ton-miles per car-day	Car-miles per car-day	Net ton-miles per mile of road per day	Pounds of coal per 1,000 gross ton-miles, including locomotives and tenders	Locomotive-miles per locomotive-day
New England Region:													
Boston & Albany 1933	4,222	3,441	7,663	32.2	22,225	1,319	443	17.1	244	21.0	4,654	149	44.3
1932	4,503	2,304	6,807	34.6	21,207	1,376	455	16.9	230	20.1	3,899	150	32.1
Boston & Maine 1933	10,156	8,097	18,253	22.5	24,856	1,811	684	20.3	328	23.5	2,914	102	37.6
1932	11,380	6,201	17,581	16.1	21,464	1,587	568	18.3	256	20.2	2,185	101	32.6
N. Y., New H. & Hartf. 1933	15,410	9,772	25,182	10.3	25,674	1,674	620	19.9	284	21.9	3,499	105	40.7
1932	16,673	8,720	25,393	8.3	22,447	1,503	525	18.4	218	18.1	2,704	109	37.0
Great Lakes Region:													
Delaware & Hudson 1933	11,535	2,878	14,413	4.3	26,905	2,134	955	28.5	466	27.2	7,919	107	37.8
1932	12,629	2,260	14,889	3.3	24,235	1,850	801	26.6	319	20.0	5,609	118	30.2
Del., Lack. & Western 1933	17,298	4,044	21,342	13.2	27,198	1,866	723	21.9	369	25.5	7,897	126	51.0
1932	19,818	3,182	23,000	9.0	25,029	1,729	659	21.7	278	19.5	6,397	119	43.8
Erie (incl. Chi. & Erie) 1933	32,795	13,774	46,569	6.4	39,931	2,519	940	23.5	463	32.3	9,319	94	51.7
1932	36,592	11,082	47,674	4.5	38,084	2,404	836	22.3	365	27.7	7,507	94	45.9
Grand Trunk Western 1933	5,411	8,178	13,589	21.2	28,791	1,572	527	20.2	244	20.1	3,283	94	43.7
1932	5,353	6,883	12,236	13.6	23,193	1,297	435	19.9	187	15.5	2,240	103	33.9
Lehigh Valley 1933	18,750	5,644	24,394	21.8	31,256	1,843	727	24.0	361	23.8	6,562	128	43.6
1932	23,009	3,710	26,719	16.1	28,574	1,722	658	22.6	241	16.8	4,802	125	32.1
Michigan Central 1933	24,938	18,470	43,408	12.2	34,220	1,850	588	19.3	169	15.3	3,750	106	70.8
1932	24,098	14,735	38,833	8.4	29,568	1,650	535	18.8	136	12.0	2,494	102	49.5
New York Central 1933	70,055	62,764	132,819	24.1	36,623	2,394	1,001	27.0	359	22.5	7,414	94	47.6
1932	88,100	56,297	144,397	15.3	32,263	2,126	837	24.1	230	15.8	5,166	94	34.2
New York, Chi. & St. L. 1933	9,523	7,044	16,567	6.2	30,954	1,716	595	21.0	583	46.6	5,818	95	90.4
1932	16,108	5,975	22,083	12.7	29,503	1,735	584	19.8	340	28.5	4,522	93	55.5
Pere Marquette 1933	12,480	4,702	17,182	3.1	25,537	1,475	559	24.9	355	24.6	2,704	87	66.3
1932	14,338	3,297	17,635	3.7	22,283	1,360	521	24.9	243	16.7	1,876	88	49.0
Pitts. & Lake Erie 1933	16,083	10,275	26,358	25.1	45,024	3,198	1,832	48.0	174	5.9	19,844	97	36.9
1932	18,860	6,222	25,082	29.9	48,800	3,394	1,879	47.5	118	4.4	12,635	94	20.2
Wabash 1933	14,998	8,795	23,793	6.0	34,765	1,731	576	19.0	391	32.5	3,794	99	47.9
1932	19,677	6,430	26,107	8.7	31,100	1,581	512	18.3	291	25.1	3,046	98	41.1
Central Eastern Region:													
Baltimore & Ohio 1933	89,074	28,165	117,239	19.6	26,124	2,113	976	32.6	394	20.2	7,358	140	49.4
1932	99,039	13,921	112,960	13.0	23,664	1,797	757	28.0	250	15.1	4,495	140	34.3
Big Four Lines 1933	19,761	22,370	42,131	16.9	31,920	1,852	822	28.8	399	22.9	6,334	99	54.7
1932	22,928	16,832	39,760	15.8	30,274	1,818	797	27.8	319	18.8	4,755	104	40.6
Central of New Jersey 1933	16,581	6,462	23,043	29.4	27,358	2,276	1,028	31.0	194	10.9	6,450	125	33.2
1932	17,860	5,497	23,357	22.4	25,615	2,020	901	30.5	163	9.4	5,497	135	29.7
Chicago & Eastern Ill. 1933	5,885	2,711	8,596	23.2	22,656	1,322	552	27.1	384	23.0	3,514	123	35.2
1932	6,286	1,886	8,172	15.6	20,490	1,234	539	27.1	329	18.5	2,863	127	31.9
Elgin, Joliet & Eastern 1933	9,487	3,939	13,426	19.6	16,478	1,955	972	40.2	197	8.4	5,940	104	31.3
1932	9,665	3,510	13,175	11.4	14,881	1,674	760	34.8	109	5.5	3,204	120	21.2
Long Island 1933	755	3,581	4,336	.9	6,101	752	277	26.4	67	4.9	735	254	28.3
1932	793	3,289	4,082	.9	5,577	767	288	27.1	68	4.7	701	283	27.1
Pennsylvania System 1933	240,729	57,471	298,200	11.8	31,707	2,323	1,061	30.7	316	16.5	9,351	115	45.1
1932	254,073	44,743	298,816	7.5	29,547	2,098	908	28.2	220	12.5	6,237	120	34.4
Reading 1933	36,251	8,813	45,064	23.1	24,971	2,061	962	34.4	268	13.3	8,319	139	39.7
1932	39,575	6,114	45,689	15.7	21,933	1,810	830	32.5	207	10.9	6,495	136	34.0
Pocahontas Region:													
Chesapeake & Ohio 1933	43,537	10,527	54,064	2.3	51,774	3,805	2,047	46.9	1,075	42.7	18,473	69	46.0
1932	47,564	7,531	55,095	2.6	48,445	3,539	1,908	46.9	805	31.6	14,150	68	36.8
Norfolk & Western 1933	34,908	4,611	39,519	4.0	51,581	3,488	1,858	46.4	991	37.6	17,657	95	48.4
1932	40,774	3,481	44,255	2.3	42,505	2,896	1,485	41.7	528	21.9	10,343	104	35.1
Southern Region:													
Atlantic Coast Line 1933	26,825	3,628	30,453	25.2	17,734	1,013	359	18.9	171	14.2	1,010	117	30.9
1932	28,094	3,197	31,291	11.6	15,628	878	309	18.2	130	10.9	791	123	28.3
Central of Georgia 1933	7,063	2,311	9,374	25.0	20,725	1,172	445	20.4	309	22.2	1,522	123	46.4
1932	7,755	1,543	9,298	22.2	18,712	1,071	376	18.4	237	19.0	1,159	126	41.9
Ill. Cent. (incl. Y. & M. V.) 1933	53,447	13,762	67,209	31.0	24,167	1,470	577	25.7	356	23.4	3,600	131	45.9
1932	54,797	12,022	66,819	20.1	24,325	1,518	604	26.9	340	21.8	3,411	122	40.3
Louisville & Nashville 1933	50,256	7,335	57,591	29.5	23,750	1,625	777	34.6	426	21.5	4,790	128	50.6
1932	53,186	5,779	58,965	20.6	21,558	1,431	665	32.2	298	15.8	3,337	132	40.4
Seaboard Air Line 1933	12,752	3,245	15,997	9.0	20,979	1,310	486	21.7	389	29.0	1,440	117	46.0
1932	15,725	2,933	18,658	9.9	18,087	1,115	377	18.8	241	20.4	1,022	126	41.8
Southern 1933	31,413	18,122	49,535	21.7	20,585	1,265	477	20.9	341	24.9	2,558	143	39.8
1932	41,314	23,324	64,638	14.6	19,341	1,164	417	18.8	196	15.5	1,902	141	32.2
Northwestern Region:													
Chi. & North Western 1933	44,468	19,385	63,853	10.9	23,040	1,505	522	21.0	257	19.6	1,946	116	42.1
1932	46,397	17,140	63,537	8.4	20,965	1,390	441	19.0	197	16.8	1,486	116	37.4
Chicago Great Western 1933	3,513	2,983	6,496	6.3	34,586	2,016	689	22.0	714	57.0	3,168	118	74.0
1932	5,099	3,337	8,436	12.4	32,803	1,953	698	22.5	486	36.8	2,834	118	56.1
Chi., Milw., St. P. & Pac. 1933	59,232	14,439	73,671	4.2	25,815	1,666	643	24.7	338	23.3	2,221	112	47.8
1932	64,255	11,757	76,012	3.5	23,757	1,556	614	25.4	290	19.1	1,960	113	43.6
Chi., St. P., Minneap. & Om. 1933	1,916	6,340	8,256	11.0	19,162	1,293	501	23.4	419	26.9	2,057	104	48.6
1932	2,186	7,130	9,316	9.6	16,603	1,176	497	25.7	381	22.7	2,071	107	45.1
Great Northern 1933	42,788	12,870	55,658	6.1	34,522	2,312	1,056	31.8	411	21.5	2,718	99	36.9
1932	44,508	9,752	54,260	4.7	25,805	1,764	768	27.8	272	15.5	1,748	111	32.4
Minneap., St. P. & S. St. M. 1933	18,871	3,342	22,213	4.1	21,291	1,378	591	25.5	299	18.5	1,545	92	69.2
1932	21,149	2,523	23,672	4.1	17,487	1,107	461	24.2	222	14.3	1,207	98	58.4
Northern Pacific 1933	40,973	4,908	45,881	13.0	29,284	1,917	744	24.5	319	21.6	2,282	137	43.1
1932	44,115	4,653	48,768	10.8	26,363	1,694	634	23.6	235	16.4	1,793	132	38.7
Oreg.-Wash. R. R. & Nav. 1933	8,113	3,158	11,271	5.8	22,896	1,445	576	23.2	260	16.8	1,342	139	44.7
1932	9,072	2,106	11,178	10.6	20,821	1,306	502	22.3	214	14.5	1,097	140	38.3
Central Western Region:													
Alton 1933	3,131	6,599	9,730	16.6	27,573	1,353	468	22.6	294	22.6	3,009	113	64.7
1932	5,231	4,496	9,727	13.4	26,283	1,342	448	21.7	286	23.7	2,924	100	57.3
Atch., Top. & S. Fe (incl. P. & S. F.) 1933	68,609	8,039	76,648	13.1	31,211	1,677	550	20.0	304	24.2	2,009	101	51.5
1932	71,956	8,383	80,339	9.7	30,408	1,659	533	20.2	287	23.3	1,985	99	51.2
Chi., Burl. & Quincy 1933	40,304	13,479	53,783	9.8	25,680	1,527	601	24.2	399	28.7	2,346	114	68.1
1932	45,305	12,415	57,720	8.4	22,768	1,407	569	24.1	311	22.4	1,949	113	50.9
Chi., Rock I. & Pac. (incl. Chi., Rock I. & Gulf) 1933	35,157	10,195	45,352	20.8	21,767	1,294	484	23.0	336	24.2	1,828	131	52.4
1932	42,943	8,435	51,378	16.2	21,124	1,267	486	23.5	297	20.6	1,828	131	49.8
Denver & R. G. Wn. 1933	13,983	3,379	17,362	4.9	27,349	1,857	711	23.4	278	18.7	1,947	152	34.6
1932	14,460	3,674	18,134	3.4	24,662	1,684	589	20.7	195	14.8	1,406	156	30.4
Los Angeles & Salt Lake 1933	4,097	850	4,947	10.7	27,502	1,513	571	22.2	501	34.1	1,999	141	51.2
1932	4,371	895	5,266	6.4	26,623	1,540	598	23.0	489	31.7	2,076	142	48.5
Oregon Short Line 1933	9,302	3,160	12,462	20.8	26,653	1,616	583	21.8	378	28.2	1,905	112	48.7
1932	9,336	3,333	12,669	10.4	23,959	1,425	508	20.6	274	21.0	1,404	105	38.6
Southern Pacific—Pacific Lines 1933	38,674	22,318	60,992	13.3	28,508	1,867	629	20.7	333	25.7	2,297	105	41.5
1932	43,322	22,257	65,579	10.8	26,891	1,759	551	19.6	262	22.2	1,931	103	40.7
Union Pacific 1933	25,090	8,824	33,914	18.8	49,094	2,219	708	19.3	534	46.0	4,804	101	58.3
1932	25,646	8,933	34,579	15.7	44,681	2,117	638	18.8	462	43.0	4,242	102	57.6
Southwestern Region:													
Gulf, Colo. & S. Fe 1933	10,650	1,531	12,181	7.6	23,501	1,406	574	25.4	266	16.1	1,667	107	46.5
1932	10,020	2,085	12,105	6.2	23,564	1,434	560	24.9	261	17.2	1,625	108	45.9
Mo.-Kans.-Texas Lines 1933	10,218	2,846	13,064	7.4	25,282	1,429	511	20.7	434	33.6	1,726	88	49.1
1932	12,494	2,206	14,700	4.0	24,558	1,445	524	21.5	359	27.4	1,609	85	45.8
Missouri Pacific 1933	24,129	18,760	42,889	13.3	28,844	1,675	631	23.6	497	35.0	2,889	117	63.2
1932	30,475	12,007	42,482	13.3	25,727	1,498	541	22.3	398	29.9	2,282	125	52.8
St. Louis-San Francisco 1933	24,538	4,693	29,231	7.4	22,584	1,328	522	24.0	355	24.0	2,001	127	42.8
1932	29,054	5,083	34,137	5.9	21,553	1,321	505	23.6	269	19.0	1,767	122	38.5
St. Louis Southwestern Lines 1933	4,629	1,970	6,599	13.1	22,349	1,241	452	20.9	436	32.3	1,537	100	50.5
1932	5,100	1,656	6,756	13.5	21,636	1,198	433	20.1	330	25.1	1,172	104	38.8
Texas & New Orleans 1933	8,718	9,657	18,375	7.3	20,842	1,243	449	21.5	347	25.6	1,425	90	46.6
1932	9,236	9,929	19,165	9.7	18,538	1,130	371	20.0	269	22.7	1,122	94	46.8
Texas & Pacific 1933	4,137	3,814	7,951	7.0	26,596	1,715	615	21.4	532	37.8	2,174	80	29.2
1932	6,148	3,093	9,241	12.2	24,185	1,580	536	20.7	396	29.1	1,880	83	27.7

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and
James M. Herring, Ph. D.

Instructors in the Wharton School of Finance and Commerce; University of Pennsylvania

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